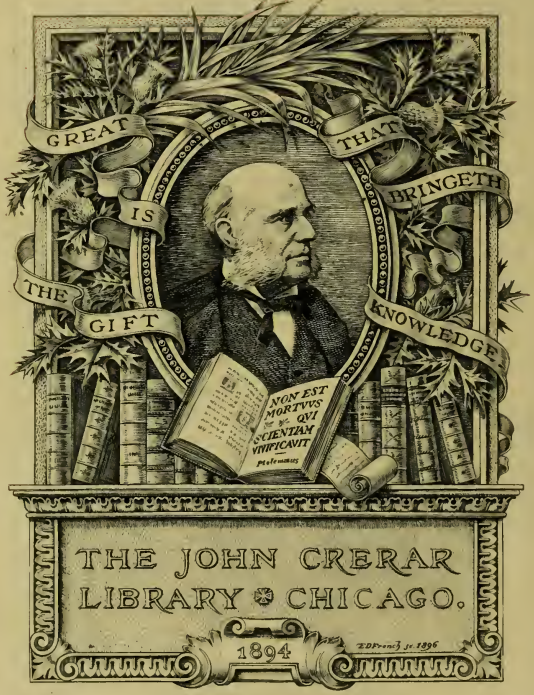

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New Hampshire College

CATALOGUE

OF THE

New Hampshire College

OF

Agriculture and the Mechanic Arts

1893-'94

CALENDAR.

◆

1893.		
September	7.	First term of fifteen weeks began—Thursday morning.
December	20.	First term ends—Wednesday night.
		Winter Vacation of Three Weeks.
1894.		
January	11.	Second term of ten weeks begins—Thursday morning.
March	21.	Second term ends—Wednesday night.
		Spring Vacation of One Week.
March	29.	Third term of ten weeks begins—Thursday morning.
June	4–5.	Examinations for Admission — beginning Monday, at 2 P. M.
June	5.	Annual Examinations close—Tuesday noon.
June	5.	Smyth Prize Reading and Speaking—Tuesday evening.
June	6.	Commencement.
		Summer Vacation of Thirteen Weeks.
September	4–5.	Examinations for Admission — beginning Tuesday, at 9 A. M.
September	6.	First term of fifteen weeks begins—Thursday morning.
December	19.	First term ends—Wednesday night.
		Winter Vacation of Three Weeks.
1895.		
January	10.	Second term of ten weeks begins—Thursday morning.
March	20.	Second term ends—Wednesday night.
		Spring Vacation of One Week.
March	28.	Third term of ten weeks begins—Thursday morning.
June	5–6.	Third term ends.

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CATALOGUE

OF THE

NEW HAMPSHIRE COLLEGE

OF

AGRICULTURE

AND THE

MECHANIC ARTS

1893-1894

DURHAM
NEW HAMPSHIRE COLLEGE
1894

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CATALOGUE

OF THE

NEW HAMPSHIRE COLLEGE OF AGRICULTURE AND THE MECHANIC ARTS

1893–1894

At the session of the legislature of New Hampshire in 1866, an act was passed establishing the "New Hampshire College of Agriculture and the Mechanic Arts" on the basis of the congressional land grant, and authorizing its location in Hanover and connection with Dartmouth College.

In accordance with this act, the institution was organized under a board of trustees, appointed partly by the governor and council and partly by the corporation of Dartmouth College.

The act of congress, by virtue of which it was established, provides that its "leading objects shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts . . . in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

An act of congress, approved August 30, 1890, provides an additional appropriation, which for the current year is nineteen thousand dollars, and is to be increased until it becomes twenty-five thousand dollars a year. This money is to be applied "to instruction in Agriculture, the Mechanic Arts, the English Language, and the various branches of Mathematical, Physical, Natural, and Economic Science, with special reference to their

applications in the industries of life, and to the facilities for such instruction."

At the session of the legislature of New Hampshire in 1891, acts were passed severing the connection with Dartmouth College and removing the New Hampshire College from Hanover to Durham; accepting the Benjamin Thompson estate, which was then of the value of about four hundred thousand dollars, and, accumulating at four per cent. compound interest, will be available as an endowment in 1910; and providing one hundred thousand dollars to be used with certain other sums in the erection of buildings.

At the session of the legislature of New Hampshire in 1893, an act was passed appropriating thirty-five thousand dollars for completing and furnishing the buildings. The buildings are now finished. They are furnished, are well supplied with apparatus, and the New Hampshire College has begun work in its new location.

The college is carrying out the provisions of the acts of congress, by giving a practical and scientific education, which is of use in all the professions and industrial pursuits, by means of the following courses of study:

1. Courses in Agriculture:
   - A. Technical Course.
   - B. Chemical "
   - C. Biological "
   - D. Institute "
   - E. Non-resident "
2. Courses in the Mechanic Arts:
   - A. Mechanical Engineering Course.
   - B. Electrical Engineering "
   - C. Technical Chemistry "
3. General Course.

FACULTY*

CHARLES S. MURKLAND, A. M., Ph. D., *President and Professor of Philosophy.*

CHARLES H. PETTEE, A. M., C. E., *Dean and Professor of Mathematics and Civil Engineering.*

CLARENCE W. SCOTT, A. M., *Professor of English Language and Literature.*

GEORGE H. WHITCHER, B. S., *Professor of Agriculture.*

ALBERT H. WOOD, B. S., *Associate Professor of Agriculture.*

FRED W. MORSE, B. S., *Professor of Organic Chemistry.*

CHARLES L. PARSONS, B. S., [illegible]

MRS. ELLEN H. RICHARDS, *Boston, Mass., Non-resident Lecturer on Domestic Science.*

AUSTIN PETERS, D. V. S., *Boston, Mass., Non-resident Lecturer on Animal Diseases.*

BENJAMIN P. WARE, *Clifton, Mass., Non-resident Lecturer on Market Gardening.*

J. WARREN SMITH, B. S., *Boston, Mass., Non-resident Lecturer on Meteorology.*

[illegible]

ALLEN G. LOWELL, *Foreman of Wood Work.*

EDWARD E. RUSSEL, *Engineer and Curator of Buildings.*

* Arranged in their respective lists in the order of appointment to service in this College.

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3. General Course.

FACULTY*

CHARLES S. MURKLAND, A. M., Ph. D., *President and Professor of Philosophy.*

CHARLES H. PETTEE, A. M., C. E., *Dean and Professor of Mathematics and Civil Engineering.*

CLARENCE W. SCOTT, A. M., *Professor of English Language and Literature.*

GEORGE H. WHITCHER, B. S., *Professor of Agriculture.*

ALBERT H. WOOD, B. S., *Associate Professor of Agriculture.*

FRED W. MORSE, B. S., *Professor of Organic Chemistry.*

CHARLES L. PARSONS, B. S., *Professor of General and Analytical Chemistry.*

CLARENCE M. WEED, D. Sc., *Professor of Zoölogy and Entomology.*

ALBERT KINGSBURY, M. E., *Professor of Mechanical Engineering.*

HERBERT H. LAMSON, M. D., *Instructor in Plant Diseases.*

GEORGE L. TEEPLE, M. E., *Instructor in Electrical Engineering and Physics.*

EDWIN B. DAVIS, B. L., *Instructor in Modern Languages.*

JAMES HALL, *Instructor in Freehand Drawing.*

JOHN N. BROWN, *Foreman of Machine Work.*

ALLEN G. LOWELL, *Foreman of Wood Work.*

EDWARD E. RUSSEL, *Engineer and Curator of Buildings.*

* Arranged in their respective lists in the order of appointment to service in this College.

STUDENTS

a—Agricultural Course ; *c*—Course in Technical Chemistry ; *m*—Mechanical Engineering Course ; *g*—General Course.

SENIORS

Name.	Residence.	Room.
Brown, Bert Sargent *m* †	*Hanover.*	Thompson Hall
Gunn, Fred Willis *a*	*Keene.*	Mr. Hayes's
Howe, Frederick William *c*	*Hollis.*	Hoitt House

JUNIORS

Adams, Frank Stanley *g*	*Gilsum.*	Mr. Chapin's
Britton, Frank Clifton *a*	*Keene.*	Mr. Chapin's
Caverno, John Lewis *a*	*Lee.*	Mr. Stevens's
Hill, Henry Elmer *g*	*Hanover.*	Thompson Hall
Trow, Charles Arthur ‡	*Mt. Vernon.*	Mr. Bunker's

SOPHOMORES

Barney, Harlan Winifred *a*	*Grafton.*	Hoitt House
Kittredge, Lewis Harris *a*	*Keene.*	Hoitt House
Libby, Frank Joshua	*Richmond, Me.*	Nesmith Hall
Wheeler, Delbert Amos *a*	*South Ashburnham, Mass.*	Mrs. Wright's
Hancock, Edward H. *m*	*Corinna, Me.*	Nesmith Hall

FRESHMEN *

Bartlett, Carrie Augusta	*Lee.*	Mr. A. L. Comings's
Bartlett, Mary Blaisdell	*Epping.*	Mrs. Chamberlin's
Bartlett, David Burns	*Manchester.*	Prof. Wood's
Berry, Walter Lincoln,	*Lebanon.*	Mrs. Jenkins's
Brown, Arthur Ordway	*Pittsfield.*	Mrs. Thompson's
Bunker, Mabel Eliza ‡	*Durham.*	Mr. J. J. Bunker's
Carlton, Will Lawton	*Dover.*	132 Court St., Dover
Chamberlin, Abby Florence	*Durham.*	Mrs. Chamberlin's
Chamberlin, George Hoitt	*Durham.*	Mrs. Chamberlin's
Chase, Frank Rufus	*Epping.*	Prof. Wood's
Chesley, Ivy May	*Durham.*	Mr. J. S. Chesley's
Clark, Frank Burnham	*Enfield.*	Mrs. Chamberlin's
Coe, John Williams	*South Newmarket.*	Mrs. Mathes's

* Freshmen are not classified in courses until the third term.

† Partial Course. ‡ Special Course.

Students are advised to prepare themselves thoroughly in all the required subjects, and especially in English, since no college can be expected to admit students who cannot write their own language with neatness, clearness, and an approach to accuracy.

They are further recommended not to limit their preparation to these requirements. The excellent academies and high schools of New Hampshire put within their reach a preliminary training which will add greatly to the value of a college course.

Candidates for advanced standing are also examined in the studies that have been pursued by the class which they propose to enter.

A certificate from any academy or high school will be accepted in place of an examination, upon any subject required for admission to the first year. Every certificate must state the amount of work done by the student, his proficiency, and the text-books used; and in case it is not evident that the student is thoroughly prepared, an examination will be required.

The times for examination are the Monday afternoon and Tuesday before Commencement, and the Tuesday and Wednesday before the beginning of the first term. Candidates will first present themselves with their credentials on the first day of the examination. See Calendar.

Certificate forms will be furnished on application.

Principals who have previously made the necessary request, will be furnished on June 1 with examination papers for admission. If the principal receiving such papers holds an examination on the Tuesday before the Thursday coming on or nearest the seventh of June, and within one week sends the answers to the questions to the President, the examination will have the same effect as if held at the college.

DESCRIPTION OF STUDIES

For the Courses of Study see pages 43–60.

AGRICULTURE

1. How Crops Grow. *Forty-five exercises.*

This course consists of lectures and recitations upon the composition of plants, the composition and sources of their food, and the processes by which they obtain and assimilate the elements necessary for their growth.

2. Plant Diseases. *See Botany.*

3. Animal Nutrition. *Thirty exercises.*

This course consists of lectures and recitations upon the physiology of the alimentary organs, the composition of foods, their assimilation, and the composition of the animal body.

4. Principles of Agriculture. *Twenty exercises.*

An exposition of the relations of the natural sciences to agriculture.

5 and 6. Practical Agriculture. *One hundred exercises.*

These two courses form a consecutive series of exercises, in which instruction is given by means of practical talks and exercises relative to fertilizers, soils, fruits, vegetables, bees, fowls, and other subjects.

7. Dairying and Dairy Chemistry. *Forty-five exercises.*

Course 7 consists of lectures and recitations upon the composition and manufacture of dairy products, and practical work in the dairy room.

8. Practical Stock Feeding. *Thirty exercises.*

Course 8 is a continuation of Course 3, and consists of lectures upon the compounding of food rations for stock, the action of various foods upon the animal system, and the most approved practice in feeding for the production of milk, butter, live weight, etc. The lectures are accompanied by practical illustrations.

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9. Applied Agriculture. *Twenty exercises.*

Course 9 is a continuation of Course 4, and is a further discussion of the relations and applications of the sciences to Agriculture.

10. Agricultural Engineering. *Twenty exercises.*

Course 10 consists of instruction in planning and locating drains, roads, and buildings, upon the farm; and discussions on the different forms and uses of agricultural machinery.

11. Stock Breeding. *Twenty exercises.*

Recitations and lectures.

12. Experimental Agriculture. *Twenty exercises.*

Course 12 is the conclusion of Courses 4 and 9, and consists of lectures upon the methods of agricultural research, discussions of problems under investigation by scientists, and observations of experiments in progress upon the College Farm.

13. Discussions of the Bulletins of Experiment Stations. *Thirty-five exercises.*

Course 13 consists of weekly discussions and reviews of bulletins, with reference to their scientific and practical value.

14. Special Work in Agriculture. *Thirty exercises.*

The time given to Course 14 will be used by the student in pursuing original work upon some subject in which he has shown especial ability, and may be chosen by him, subject to the approval of the Professor of Agriculture.

BOTANY

1. Introductory Botany. *Fifty exercises.*

A general introduction to the study of plants by means of laboratory work and lectures.

2. Structural Botany. *Forty-five exercises.*

Lectures and laboratory work on the minute structure and physiology of plants, with special reference to the lower forms.

Open only to those who have taken Course 1.

3. Forestry.

Lectures concerning the utility of forests, principles of sylviculture; forestry laws, character and composition of woods, and the distribution of timber trees in the United States.

4. Plant Diseases. *Twenty exercises.*

A study by means of lectures and laboratory work of some of the more important fungous diseases of cultivated plants and the means of preventing their injuries.

5. Advanced Botany.

Averaging four exercises a week for a year.

Course 5 is intended for students electing botany for their Senior year, the instruction to be modified by needs of individual students.

Open only to those who have taken all preceding courses.

CHEMISTRY

1. Inorganic Chemistry. *Forty-five exercises.*

Lectures and recitations on general theoretical Chemistry, illustrated by experiments, charts, specimens, lantern views, etc. Solutions of chemical problems will be required.

2. Inorganic Chemistry. *Thirty exercises.*

Course 2 is a continuation of Course 1, but the time will be spent mainly on the metallic elements, their metallurgy, salts, etc.

Open only to students who have passed in Course 1.

3. Organic Chemistry. *Thirty exercises.*

Course 3 will consist of lectures and recitations on the chemistry of the carbon compounds, together with the study of their properties by means of laboratory practice.

Open to students who have passed in Course 1.

4. Organic Chemistry. *Twenty exercises.*

Course 4 is a continuation of Course 3 and must be preceded by it.

5. Qualitative Chemical Analysis.

Course 5 consists of laboratory practice with occasional lectures. The student is expected to become proficient in the separation and detection of the common acids and bases, and to keep a full set of notes. He will have practice in the writing of reactions and will fill out numerous slips containing questions bearing upon his work.

Open only to students who have completed Courses 1 *and* 2.

6. Qualitative Analysis completed and Quantitative Analysis begun. *Course extends through two terms.*

The work in quantitative analysis will be, in the main, elementary and preparatory for advanced work.

Open to those who have completed Course 5.

7. Applied or Industrial Chemistry. *Forty exercises.*

Course 7 consists of lectures on chemical manufactures, such as iron, steel, sugar, salt, sodium carbonate, fertilizers, sulfuric acid, glass, matches, paints, dyes, soaps, illuminating gas, petroleum, etc. The lectures will be illustrated by lantern views; and trips to the leading New England cities, to examine important chemical manufactures, will be taken as far as practicable.

Open only to those who have completed Courses 1, 2, 3, *and* 4.

8. Quantitative Analysis.

Course 8 consists of special work arranged for those in the Agricultural Course who are limited to the chemistry of the Junior Year. The course consists mainly in the analysis of fertilizers, fodders, grains, milk and other dairy products, etc.

Open to those students who have completed Course 5.

9. Advanced Quantitative Analysis.

Course 9 extends through the year and is intended to fit the student for work in the laboratories of agricultural experiment stations, fertilizer works, iron works, sugar refineries, etc.; and for the duties of the public analyst. The course will be made to fit the end which each has in view, and will be largely an individual one. For those students in the Chemical Division of the Agricultural Course the analyses made will tend in the main toward agricultural products, fertilizers, mucks, marls, manures, dairy products, waters, food stuffs, sugars, etc. For the student wishing to enter metallurgical works the analyses will be in the main upon iron, steel, and other metals, ores, limestone, slags, alloys, fuels, etc. As a preparation to the study of medicine, work will be done on poisons, foods, drugs, urine, etc. Other lines will be arranged to meet the wants of the individual student. Every student will be given some practice in all of the branches of agricultural, metallurgical, medical, sanitary, and industrial chemistry, in order to lay a foundation for any future work which may be required of them. A short course in gas analysis will also be provided. A portion of the time of the last two terms is given to work bearing upon the preparation of a graduating thesis.

Open to students who have completed Course 6.

10. Organic Chemistry.

Course 10, for students in the Chemical Division of the Agricultural Course, and in the Technical Chemistry Course, consists of laboratory practice by the students in preparing and purifying products relating to their respective lines of work.

Open to those who have taken Courses 3 *and* 4.

11. Chemical Journals, Methods, etc. *Thirty-five exercises.*

The work consists in the study of current chemical literature, which is mainly in the German language, with recitations once a week throughout the

year. Each student will be expected to prepare abstracts, reports, criticisms, etc., upon assigned articles.

Open to students taking Course 9.

12. Chemical Philosophy. Lectures and recitations. *Forty exercises.*

Work consists in advanced study of chemical theory. Practical experiments will be performed, with the aid of the student, in the determination of vapor density, molecular weights, specific heat, etc.; and the study of isomorphism, diffusion of gases, solutions, molecular and atomic volume, etc., will take up much of the time.

Course 12 *comes in alternate years with Course* 7 *and is open to students who have completed Courses* 1, 2, 3, *and* 4.

DRAWING

Two and one half hours work is reckoned as one exercise.

1. Freehand Drawing.

a, *Thirty exercises.* *b*, *Twenty exercises.*

2. Descriptive Geometry and Drawing.

a, *Fifty exercises.* *b*, *Thirty exercises.*

Graphic solution of problems in solid geometry.

Course 2 *is open only to those who have taken Mathematics* 2.

3. Mechanical Drawing.

a, Elementary Projection Drawing. *Twenty exercises.*

b, Perspective Drawing and Line Shading. *Twenty exercises.*

c, Workshop Drawings. Tracing and the blue process of copying drawings. *Thirty exercises.*

ENGINEERING

1. Surveying. *Fifty exercises.*

Recitations, field work, and plotting, including compass, transit, plane-table, and level work.

2. Mechanism. *Seventy-five exercises.*

Recitations, and exercises in drawing outlines of elementary combinations.

Course 2 *is open only to those who have taken Drawing* 2.

3. Mechanics of Engineering. *One hundred exercises.*

a, Dynamics (Statics and Kinetics).

b, Mechanics of Materials.

Course 3 *is open only to those who have taken Course* 2 *and Mathematics* 6.

4. Materials of Construction. *Sixty exercises.*

Recitations on the production, properties, uses, and preservation of engineering materials.

Course 4 *is open only to those who have taken Course* 3 *b and Chemistry* 2.

5. Thermo-Dynamics. *Seventy-five exercises.*

Course 5 *is open only to those who have taken Course* 3 *b and Physics* 4 *to* 6.

6. Heat Motors and Refrigerating Machinery. *Thirty exercises.*

Recitations.

Course 6 *is open only to those who have taken Course* 5.

7. Construction and Theory of Dynamos and Electro-motors. *Seventy-five exercises.*

Lectures and quizzes.

Course 7 *is open only to those who have taken Physics* 4 *to* 6 *and Mathematics* 5 *and* 6.

8. Work in Mechanical Laboratory.

a, and *b*, Tests of Materials. *Sixty exercises.*

c, Tests of Boilers and Engines. *Twenty exercises.*

Courses 8 *a and* 8 *b are open only to those who have taken Course* 3 *b. Course* 8 *c is open only to those who have taken Course* 5.

9. Machine Design. *Forty exercises.*

Recitations.

Course 9 *is open only to those who have taken Courses* 3 *and* 4.

10. Dynamo Design. *Forty exercises.*

Work in the drawing room in the elementary designing of dynamos and electro-motors.

Course 10 *is open to those who have taken Course* 7.

11. Electrical Installations. *Thirty exercises.*

Lectures and quizzes on the methods and systems of electric lighting and electric distribution of power.

Course 11 *is open only to those who have taken Course* 7.

12. Sanitary Engineering. *Ten exercises.*

Lectures on heating, ventilation, drainage, and plumbing of public and private buildings.

13. Roads, Streets, and Pavements. *Twenty exercises.*

Recitations and lectures on construction and maintenance of paved, macadamized, and gravel roads, with discussion of laws relating thereto.

ENGLISH

1. Rhetoric. *Seventy exercises.*

Themes, with other exercises.

2. Three Themes. *One each term.*

3. Three Original Declamations. *One each term.*

4. Three Original Declamations. *One each term.*

5. English Literature, Chaucer to Milton. *Thirty exercises.*

Study of authors.

6. English Literature, Dryden to Cowper. *Twenty exercises.*

Study of authors.

7. Writers of the First Part of the Nineteenth Century. *Fifteen exercises.*

8. English Literature, Victorian Writers. *Thirty exercises.*

9. American Literature. *Thirty or fifty exercises.*

Lectures and study of authors.

FRENCH

1. French Grammar and Tales. *Forty-five exercises.*

2. Easy Reading with Supplementary Syntax. *Thirty exercises.*

3. The Romantic School. *Thirty exercises.*

4. History of French Literature. *Forty-five exercises.*

5. Satire, Voltaire. *Thirty exercises.*

6. The Classic School. *Thirty exercises.*

Each course in French is open only to students who have completed the preceding course.

GEOLOGY

1. Elementary Geology. *Thirty Exercises.*

2. Mineralogy. *Thirty Exercises.*

A short course in blowpipe analysis, followed by laboratory practice in the determination and study of minerals, with special reference to their economic value.

Course 2 is open only to students who have taken Chemistry 1 and 2.

3. Meteorology. *Twenty exercises.*

Recitations and lectures on wind systems, precipitation, humidity, laws of storms and tornadoes, and methods of prediction of atmospheric changes.

GERMAN

1. German Grammar and Tales. *Forty-five exercises.*

2. Easy Reading and Syntax. *Thirty exercises.*

3. Lyric Poetry. *Thirty exercises.*

4. Scientific German. *Forty-five exercises.*

5. Prose Literature. *Thirty exercises.*

6. German Drama. *Thirty exercises.*

Each course in German is open only to students who have completed the previous course.

HISTORY

1. Ancient History. *Forty-five exercises.*

2. Mediæval History. *Thirty exercises.*

3. Modern History. *Thirty exercises.*

4. American Political History. *Forty-five exercises.*

MATHEMATICS

1. Higher Algebra. *Sixty-five exercises.*

2. Solid Geometry, with advanced course. *Fifty-five exercises.*

3. Plane and Spherical Trigonometry. *Sixty exercises.*

4. Theory of Equations. *Thirty exercises.*

5. Analytic Geometry. *Seventy-five exercises.*

6. Differential and Integral Calculus. *One hundred exercises.*

PHILOSOPHY

1. Logic. *Thirty exercises.*

Lectures and recitations.

2. Ethics. *Twenty exercises.*

Lectures and recitations.

PHYSICS

1. Mechanics and Heat. *Forty-five exercises.*

2. Electricity and Magnetism. *Thirty exercises.*

3. Light and Sound. *Thirty exercises.*

Courses 1, 2, and 3 are a general introduction to the subject. The instruction is given by recitations and lectures, the latter being illustrated by experiments and stereopticon. Notes on lectures and experiments are submitted by each student.

4. Laboratory Work in Mechanics and Heat. *Forty-five exercises.*

5. Laboratory Work in Heat and Light. *Thirty exercises.*

6. Laboratory Work in Electricity and Magnetism. *Thirty exercises.*

The work consists in the experimental verification of the laws of physics and the determination of physical constants; for example, the student will by experiments investigate the intensity of gravity, co-efficients of friction, the analytical balance, elasticity of wires, specific heats, laws of radiation and absorption of heat, candle power of lights, dip, declination and intensity of the earth's magnetism, laws of electric currents, of electro-magnets, etc. A systematic and carefully written report on each experiment is required.

Courses 4, 5, *and* 6 *are taken consecutively and are open only to those who have passed in Courses* 1, 2, *and* 3. *Students in Engineering must also have passed in Mathematics* 1 *to* 6.

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7. Electrical and Photometrical Measurements.

Thirty exercises.

The work consists in the measurement by various methods of current, resistance, and E. M. F., and in photometric study of arc and incandescent lamps.

Course 7 *is open only to those who have passed in Courses* 4, 5, *and* 6.

8. Experimental work on the efficiency, characteristic curves, and curves of potential of dynamos and motors.

Twenty exercises.

Course 8 *is open only to those who have passed in Physics* 7 *and Engineering* 7.

9. Advanced Work in Physical Laboratory.

One hundred and five exercises.

Course 9 *is open only to those who have passed in Courses* 1 *to* 6.

10. Astronomy. *Forty exercises.*

POLITICAL SCIENCE

1. Political Economy. *Lectures.* *Fifty exercises.*

2. Laws of Business. *Lectures.* *Thirty-three exercises.*

3. Constitutional Law. *Forty exercises.*

4. Advanced Political Economy. *Thirty exercises.*

Course 4 *is open only to those who have taken Course* 1.

SHOP WORK

Three hours work in the shops is reckoned as one exercise.

1. Work in Wood Shop.

Exercises in carpentry, joinery, and pattern making.

a. Forty-five exercises. *b. Thirty exercises.*
c. Forty-five exercises. *d. Thirty exercises.*

2. Work in Machine Shop.

Exercises in bench work, machine work, and shop measurements.

a. Thirty exercises. *b. Twenty exercises.*
c. Twenty exercises. *d. Forty-five exercises.*
e. Thirty exercises. *f. Thirty exercises.*

ZOÖLOGY

1. Introductory Zoölogy. *Sixty exercises.*

A general introduction to the study of animal life, by means of lectures and laboratory dissections of the principal types.

2. Animal Biology. *Forty exercises.*

A general study of the nature and process of animal life, with especial attention to heredity, variation, development, and mental powers.

Open to students who have taken Course 1.

3. Entomology. *Fifty exercises.*

A review of the classification, structural characters, and biological relations of insects, with a special study of those injurious to cultivated crops and domestic animals, and of the means of preventing their injuries.

Open only to those who have taken Course 1.

4 *a*. Systematic Ornithology. *Twenty exercises.*

Lectures on the classification of birds, with laboratory determinations of species.

4 *b*. Economic Ornithology. *Twenty exercises.*

Lectures on the relations of birds to agriculture, and their relations to each other and to other organisms.

Courses 4*a and* 4*b are open only to students who have taken Course* 1, *and, if possible, Courses* 2 *and* 3.

5. Advanced Zoölogy.

Averaging four exercises a week for a year.

Course 6 *is intended for those students who elect Zoölogy for their Senior Year. It will usually be modified to suit individual needs.*

6. Zoölogical Bibliography. *One hour a week for a year.*

Open only to students taking Course 5.

COURSES OF STUDY

For details see Description of Studies.

REGULAR COURSE *

Freshman Year.

FIRST TERM.

	Hours per week
Rhetoric and Themes—English 1	2
Algebra and Geometry—Mathematics 1 and 2	6
Joinery—Shop Work 1 *a*	3
Freehand Drawing—Drawing 1 *a*	2
Ancient History—History 1; or French†—French 1	3

SECOND TERM.

Rhetoric and Themes—English 1	2
Geometry and Trigonometry—Mathematics 2 and 3	6
Shop Work—Shop Work 1 *b*	3
Freehand Drawing—Drawing 1 *b*	2
Mediæval History—History 2; or French†—French 2	3

THIRD TERM.

Rhetoric and Themes—English 1	2
Trigonometry—Mathematics 3	3
Descriptive Geometry—Drawing 2 *a*; or Botany—Botany 1	5
Modern History—History 3; or French—French 3	3
Theory of Equations—Mathematics 4; or Shop Work 1 *c*	3

* For the first two years students are not designated as being in any of the special courses, but all take the studies laid down in the regular course.

† French can be elected by those who have taken History 1, 2, and 3.

Sophomore Year.

FIRST TERM.

	Hours per week.
Analytical Geometry—Mathematics 5; or Plant Diseases —Botany 4, and English Literature—English 6	5 or 4
French,‡ 1 or 4; or German 1; or Shop Work 1 *c*	3
Physics—Physics 1	3
Shop Work 1 *c*; or Botany 2	3
Descriptive Geometry—Drawing 2 *b*; or Inorganic Chemistry—Chemistry 1	2 or 3
One Theme.	

SECOND TERM.

Calculus—Mathematics 5; or Inorganic and Organic Chemistry—Chemistry 2 and 3	5 or 6
French 2 or 5; or German 2; or Shop Work 10	3
Physics—Physics 2	3
Drawing 3 *b*; or English Literature—English 5	2
Shop Work 10; or Mechanical Drawing 3 *a*	3 or 2
One Theme.	

THIRD TERM.

Calculus—Mathematics 6; or Organic Chemistry—Chemistry 4; and Mineralogy—Geology 2	5
Surveying—Engineering 1	5
Physics—Physics 3	3
French 3 or 6; or German 3; or American Literature—English 8	3
One Theme.	

Women may substitute for surveying one of the elective studies from the third term of the Junior Year.

‡ French is required of those students who intend to take the work of the Chemical and Biological Divisions.

COURSE IN AGRICULTURE

This course is designed to give young men a thorough knowledge of practical Agriculture and the sciences having a direct bearing upon it, without neglecting the broad principles of a general education.

The strictly agricultural work is planned to give valuable knowledge for future use on the farm or in the dairy.

The Chemical and Biological Divisions are designed to give professional training in these two sciences which have such a close connection with modern Agriculture.

Junior Year.

FIRST TERM.

	Hours per week
Zoölogy—Zoölogy 1	4
How Crops Grow—Agriculture 1	3
Chemistry—Chemistry 5	5
English Literature—English 7	1
German—German 1; or Physical Laboratory—Physics 4	3
One Original Declamation—English 3.	

SECOND TERM.

Animal Nutrition—Agriculture 3	3
Geology and Meteorology—Geology 1 and 3	5
Agricultural Chemistry—Chemistry 8	3
Principles of Agriculture—Agriculture 4	2
German—German 2; Animal Biology—Zoölogy 2	3
One Original Declamation—English 3.	

THIRD TERM.

Entomology—Zoölogy 3	5
Ethics—Philosophy 2	2
Practical Agriculture—Agriculture 5	4
Roads—Engineering 13	2
German—German 3; or Chemistry—Chemistry 6	3
One Original Declamation—English 3.	

Senior Year.

FIRST TERM.

	Hours per week.
Laws of Business and Constitutional Law—Political Science 2 and 3	5
Dairying and Dairy Chemistry—Agriculture 7	3
Practical Agriculture—Agriculture 6	4
Discussion of Experiment Station Bulletins—Agriculture 13	1
German—German 4; or Political History—History 4	3
One Original Declamation—English 4.	

SECOND TERM.

Astronomy and Sanitary Science—Physics 10, Engineering 12	5
Stock Feeding—Agriculture 8	3
Applied Agriculture—Agriculture 9	2
Economic Ornithology—Zoölogy 4 *b*	2
Discussion of Experiment Station Bulletins—Agriculture 13	1
German—German 5; or Special Work—Agriculture 14	3
One Original Declamation—English 4.	

THIRD TERM.

Political Economy—Political Science 1	5
Agricultural Engineering—Agriculture 10	2
Stock Breeding and Experimental Agriculture—Agriculture 11 and 12	4
Discussion of Experiment Station Bulletins—Agriculture 13	1
German—German 6; or Logic—Philosophy 1	3
One Original Declamation—English 4.	

CHEMICAL DIVISION OF THE AGRICULTURAL COURSE

The work in this division is intended especially to fit for the profession of an agricultural chemist—for work in experiment stations, large dairy establishments, fertilizer works, etc. This field offers, perhaps, more inducements for investigation in chemical science than any other. The chemistry of plant or animal growth and nutrition is comparatively undeveloped, and offers a wide and profitable field for research.

Junior Year.

FIRST TERM.

	Hours per week.
How Crops Grow—Agriculture 1	3
German—German 1	3
Plant Diseases—Botany 4	2
English Literature—English 6	3
Chemistry—Chemistry 5	5
One Original Declamation—English 3.	

SECOND TERM.

Animal Nutrition—Agriculture 3	3
German—German 2	3
Geology—Geology 1	3
Chemistry—Chemistry 6	5
Applied Chemistry—Chemistry 7	2
One Original Declamation—English 3.	

THIRD TERM.

Entomology—Zoölogy 3	5
German—German 3	3
Chemistry—Chemistry 6	5
Applied Chemistry—Chemistry 7	2
One Original Declamation—English 3.	

Senior Year.

FIRST TERM.

Constitutional Law and Laws of Business—Political Science 2 and 3	5
German—German 4	3
Chemistry—Chemistry 9	5
Organic Chemistry—Chemistry 10	2
Chemical Journals, Methods, etc.—Chemistry 11	1
One Original Declamation—English 4.	

SECOND TERM.

Astronomy—Physics 10	4
Sanitary Engineering—Engineering 12	1

	Hours per week.
German—German 5	3
Chemistry—Chemistry 9	5
Chemical Philosophy—Chemistry 12	2
Chemical Journals, Methods, etc.—Chemistry 11	1
One Original Declamation—English 4.	

THIRD TERM.

Political Economy—Political Science 1	5
German—German 6	3
Chemistry—Chemistry 9	5
Chemical Philosophy—Chemistry 12	2
Chemical Journals, Methods, etc.—Chemistry 11	1
One Original Declamation—English 4.	

BIOLOGICAL DIVISION OF THE AGRICULTURAL COURSE

Students desiring to make a special study of the biological sciences relating to Agriculture—such as botany, entomology, economic zoölogy, etc.—may elect the following schedule for their last two years:

Junior Year.

FIRST TERM.

	Hours per week.
Zoölogy—Zoölogy 1	4
How Crops Grow—Agriculture 1	3
German—German 1	3
Chemistry—Chemistry 5	5
English Literature—English 6	1
One Original Declamation—English 3.	

SECOND TERM.

Animal Nutrition—Agriculture 3	3
Geology—Geology 1	3
German—German 2	3
Chemistry—Chemistry 6	3
Animal Biology—Zoölogy 2	4
One Original Declamation—English 3.	

THE
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Work Shops.

THIRD TERM.

	Hours per week.
Entomology—Zoölogy 3	5
German—German 3	3
Logic—Philosophy 1	3
Agriculture—Agriculture 5	3
Ethics—Philosophy 2	2
One Original Declamation—English 3.	

SENIOR YEAR.

FIRST TERM.

Laws of Business and Constitutional Law—Political Science 2 and 3	5
German—German 4	3
Meteorology—Geology 3	2
Botany—Botany 5; or Zoölogy—Zoölogy 5 and 6	6
One Original Declamation—English 4.	

SECOND TERM.

Astronomy—Physics 10	4
Sanitary Science—Engineering 12	1
German—German 5	3
Ornithology—Zoölogy 5	4
Botany—Botany 5; or Zoölogy—Zoölogy 5 and 6	4
One Original Declamation—English 4.	

THIRD TERM.

Political Economy—Political Science 1	5
German—German 6	3
American Literature—English 8	3
Botany—Botany 5; or Zoölogy—Zoölogy 5 and 6	5
One Original Declamation—English 4.	

COURSE IN TECHNICAL CHEMISTRY

This course is designed to meet the needs of the general professional chemist. Those desiring to give their chief time to agricultural chemical research and analysis are advised to take the Agricultural course, giving their last two years to the Chemical Division of that course.

Junior Year.

FIRST TERM.

	Hours per week.
Chemistry—Chemistry 5	5
German—German 1	3
Physical Laboratory—Physics 4	3
How Crops Grow—Agriculture 1; or English Literature—English 6	3
Plant Diseases—Botany 4	2
One Original Declamation—English 3.	

SECOND TERM.

Chemistry—Chemistry 6	5
German—German 2	3
Physical Laboratory—Physics 5	3
Geology—Geology 1	3
Applied Chemistry—Chemistry 7	2
One Original Declamation—English 3.	

THIRD TERM.

Chemistry—Chemistry 6	5
German—German 3	3
Physical Laboratory—Physics 6	3
Applied Chemistry—Chemistry 7	2
Machine Shop—Shop Work 2 *a*	2
One Original Declamation—English 3.	

Senior Year.

FIRST TERM.

Chemistry—Chemistry 9	5
Organic Chemistry—Chemistry 10	2
German—German 4	3
Constitutional Law and Laws of Business—Political Science 2 and 3	5
Chemical Journals, Methods, etc.—Chemistry 11	1
One Original Declamation—English 4.	

SECOND TERM.

	Hours per week.
Chemistry—Chemistry 9	5
German—German 5	3
Astronomy—Physics 10	4
Sanitary Engineering—Engineering 12	1
Chemical Philosophy—Chemistry 12	2
Chemical Journals, Methods, etc.—Chemistry 11	1
One Original Declamation—English 4.	

THIRD TERM.

Chemistry—Chemistry 9	5
German—German 6	3
Political Economy—Political Science 1	5
Chemical Philosophy—Chemistry 12	2
Chemical Journals, Methods, etc.—Chemistry 11	1
One Original Declamation—English 4.	

COURSE IN MECHANICAL ENGINEERING

Junior Year.

FIRST TERM.

Mechanism—Engineering 2	5
French*—French 4; or German—German 4	3
Chemistry—Chemistry 1	3
Physical Laboratory—Physics 4	3
Shop Work—Shop Work 2 *a*	2
One Original Declamation—English 3.	

SECOND TERM.

Mechanics and Engineering—Engineering 3 *a*	5
French*—French 5; or German—German 5	3
Chemistry—Chemistry 2	3
Physical Laboratory—Physics 5	3
Shop Work—Shop Work 2 *b*	2
One Original Declamation—English 3.	

*Engineering students who take French in Freshman Year take German in the two following years. Engineering students who take History in Freshman Year may elect between two years of French and two years of German.

THIRD TERM.

	Hours per week.
Mechanics of Engineering—Engineering 3 *b*	5
French—French 6; or German—German 6	3
Mineralogy—Geology 2	3
Physical Laboratory—Physics 6	3
Shop Work—Shop Work 2 *c*	2
One Original Declamation—English 3.	

Senior Year.

FIRST TERM.

Materials of Construction—Engineering 4	4
Thermo-Dynamics—Engineering 5	3
Chemistry—Chemistry 5	2
Drawing—Drawing 3 *c*	2
Shop Work—Shop Work 2 *d*	3
Mechanical Laboratory—Engineering 8 *a*	2
One Original Declamation—English 4.	

SECOND TERM.

Thermo-Dynamics—Engineering 5	3
Chemistry—Chemistry 6	2
Mechanical Laboratory—Engineering 8 *b*	3
Machine Design—Engineering 9	4
Shop Work—Shop Work 2 *e*	3
Work on Thesis	1
One Original Declamation—English 4.	

THIRD TERM.

Political Economy—Political Science 1	5
Heat Motors and Refrigerating Machines—Engineering 6	3
Mechanical Laboratory—Engineering 8 *c*	2
Shop Work—Shop Work 2 *f*	3
Work on Thesis	3
One Original Declamation—English 4.	

COURSE IN ELECTRICAL ENGINEERING

For three years the course is the same as the course in Mechanical Engineering. The work of the fourth year is almost entirely technical. Recitations and lectures are supplemented by work in the laboratories, or by the inspection and study of machinery in operation.

For the latter purpose the electric lighting and electric street railway systems in operation within ten miles of the college furnish excellent opportunities. Even more valuable will be a small but first-class central station, on the alternating system, operated by the college itself, which the student will be enabled to study and test.

Junior Year.

Same as the Mechanical Engineering Course.

Senior Year.

FIRST TERM.

	Hours per week.
Materials of Construction—Engineering 4	4
Thermo-Dynamics—Engineering 5	3
Chemistry—Chemistry 5	2
Drawing—Drawing 3 *c*	2
Dynamo-Electric Machinery—Engineering 7	5
One Original Declamation—English 4.	

SECOND TERM.

Thermo-Dynamics—Engineering 5	3
Chemistry—Chemistry 6	2
Mechanical Laboratory—Physics 8 *b*	3
Dynamo Design—Engineering 10	4
Electrical Laboratory—Physics 7	3
Work on Thesis	1
One Original Declamation—English 4.	

THIRD TERM.

Political Economy—Political Science 1	5
Heat Motors—Engineering 6	3
Electrical Laboratory—Physics 8	2
Electrical Installation—Engineering 11	3
Work on Thesis	3
One Original Declamation—English 4.	

GENERAL COURSE

Junior Year.

FIRST TERM.

German—German 1	3
English Literature—English 7	1
Laboratory Work in Chemistry—Chemistry 5	5
One Original Declamation—English 3.	

Elective, seven hours per week, from the following:

How Crops Grow—Agriculture 1	3
Plant Diseases—Botany 4	2
Laboratory Work in Physics—Physics 4	3
Analytic Geometry—Mathematics 5	5
Zoölogy—Zoölogy 1	4

SECOND TERM.

German—German 2	3
English Literature—English 7	3
One Original Declamation—English 3.	

Elective, ten hours per week, from the following:

	Hours per week.
Animal Nutrition—Agriculture 3	3
Geology—Geology 1	3
Laboratory Work in Chemistry—Chemistry 6	3 to 5
Laboratory Work in Physics—Physics 5	3
Animal Biology—Zoölogy 2	4
Calculus—Mathematics 6	5

THIRD TERM.

German—German 3	3
Political Economy—Political Science 1	5
One Original Declamation—English 3.	

Elective, eight hours per week, from the following:

	Hours per week.
Entomology—Zoölogy 3	5
Logic—Philosophy 1	3
Laboratory Work in Chemistry—Chemistry 6	3 or 5
Laboratory Work in Physics—Physics 6	3
Calculus—Mathematics 6	5

Senior Year.

FIRST TERM.

Constitutional Law and Laws of Business—Political Science 2 and 3	5
German—German 4	3
One Original Declamation—English 4.	

Elective, eight hours per week, from the following:

American Political History—History 4	3
Advanced Work in Physical Laboratory—Physics 9	3
Laboratory Work in Chemistry—Chemistry 9	3 to 5
Advanced Botany—Botany 5	4
Advanced Zoölogy—Zoölogy 5 and 6	4 or 5

SECOND TERM.

Astronomy and Sanitary Science—Physics 10 and Engineering 12	5
German—German 5	3
One Original Declamation—English 4.	

Elective, eight hours per week, from the following:

Advanced Political Economy—Political Science 4	3
Advanced Work in Physical Laboratory—Physics 9	3
Laboratory Work in Chemistry—Chemistry 9	3 or 5
Advanced Botany—Botany 5	4
Advanced Zoölogy—Zoölogy 6 and 7	4 or 5
Meteorology—Geology 3	2
Ornithology—Zoölogy 4 *a*	2

THIRD TERM.

American Literature—English 8	5
German—German 6	3
Work on Thesis.	
One Original Declamation—English 4.	

Elective, three to five exercises, from the following:

	Hours per week.
Advanced Work in Physical Laboratory—Physics 9	3
Laboratory Work in Chemistry—Chemistry 9	3 or 5
Advanced Botany—Botany 5	4
Advanced Zoölogy—Zoölogy 5 and 6	4 or 5
Roads—Engineering 13	2
Ethics—Philosophy 2	2

INSTITUTE COURSE IN AGRICULTURE

This course is intended for those who desire a better understanding of the science and practice of Agriculture, but who are unable to pursue the regular course.

The course for 1894 is four weeks in length, and will begin February 5. It is expected to prepare men for an intelligent home study of practical agricultural problems. Instruction will be given by means of lectures, the faculty being assisted by specialists. Students will be required to take notes, and join in the discussion which will frequently follow the lectures. Those interested in particular subjects will be given all available facilities to inform themselves by means of practical work.

The average expense of attendance upon this course will be about $20. This estimate includes railroad fares, room, and board.

The following is a list of subjects to be considered, with the number of lectures upon each: Plant Structure, 2; Chemistry of Plant Life, 4; Fertilizers, 6; Plant Diseases, 4; Dairying, 6; Stock-Feeding, 6; Injurious and Beneficial Insects, 6; Relation of Birds to Agriculture, 2; Soils, 3; Drainage, 3; Diseases of Farm Animals, 6; Market Gardening, 6; Breeds of Live Stock, 2; Poultry Keeping, 3; Forestry, 4; Farm Buildings, 2; Farm Machinery, 2; Bee Keeping, 2; Sugar Making, 2; Weather Service, 2; Household Science, 4; Water, 2.

A complete programme of the course will be issued the latter part of December. For further information, apply to President C. S. Murkland.

FORESTRY LECTURES

During the winter of 1893–'94 a course of lectures on Forestry will be delivered at the college by members of the New Hampshire Forestry Commission. These lectures will be open to the general public. Four of these lectures will be included in the Institute Course in Agriculture.

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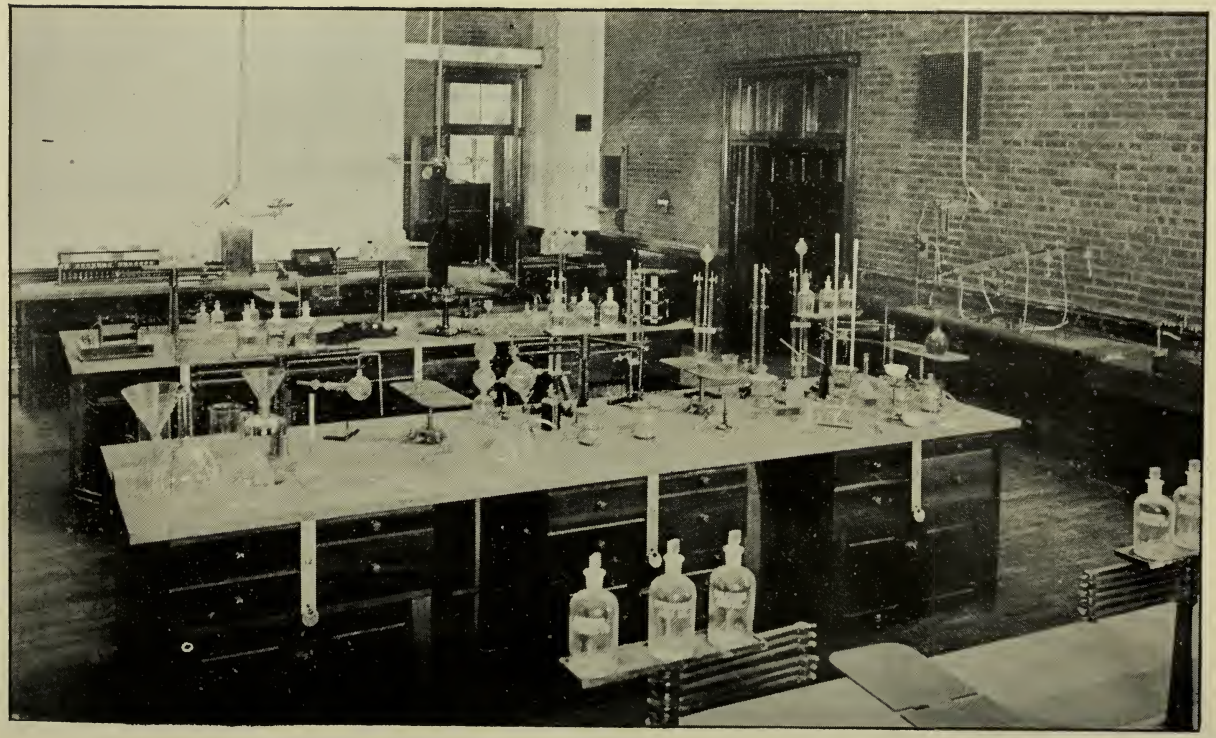


Quantitative Chemical Laboratory.

NON-RESIDENCE COURSE IN AGRICULTURE

This course is primarily designed to meet the needs of those farmers' sons who are unable to leave home to attend college, but who feel the want of the fuller knowledge of their work which the college offers.

The instruction in this course will be given mainly by correspondence, but it is expected that where several students live near together, members of the faculty will be able to give lectures in person at occasional intervals, thus bringing the course into line with both the Chatauqua and University extension movements.

The best standard books, selected Experiment Station bulletins, and pamphlets written by practical specialists will be used. In this way it is hoped to make it a progressive course along practical lines.

The coöperation of all farmers' organizations is earnestly desired.

Circulars giving further information will be sent on application.

GENERAL INFORMATION

ATTENDANCE

All students are required to attend chapel and rhetoricals, and to register for at least sixteen exercises per week.

PRIZES

I. The Smyth Prizes.—Hon. Frederick Smyth, of Manchester, N. H., offers two prizes in the Senior and Junior classes, one of twenty and the other of ten dollars, for the best essays on subjects connected with agriculture or the mechanic arts; also three prizes, one of twenty, one of fifteen, and one of ten dollars, for excellence in oratory, open to the upper classes; also two prizes, one of fifteen and one of ten dollars, to the lower classes for reading.

II. Bailey Prize.—Dr. C. H. Bailey, of Gardner, Mass., and E. A. Bailey, B. S., of Winchendon, Mass., offer a prize of ten dollars for proficiency in chemistry.

III. Erskine Mason Memorial Prize.—Mrs. Erskine Mason, of Stamford, Conn., has invested one hundred dollars as a memorial of her son, a member of the class of '93, the income from which is to be given, for the present, to that member of the Senior class who has made the greatest improvement during his course.

DEGREES

The degree of Bachelor of Science will be conferred upon those who complete a four years course, or its equivalent, and pass the final examinations. Each candidate for a degree must prepare a thesis on some subject relating to the course of study taken.

The college offers opportunities for post-graduate study in agricultural, scientific, and engineering lines. After the satisfactory completion of an appropriate amount of work, advanced degrees will be given.

DONATIONS

The college acknowledges the gift of fifteen volumes of books from Mrs. Thomas Crosby, of Hanover, and five volumes from Miss Mary E.

Smith, of Durham, as well as a large number of reports and pamphlets from various sources.

BUILDINGS

THOMPSON HALL.

Thompson Hall, the main college building, has a length of 128 feet, exclusive of the porte cochère, which is forty feet long, and a width of 93 feet in the widest part. It is built of granite and brick, and has three stories besides the basement.

One half of the first floor and basement is devoted to the library, which is provided with a large, well lighted reading room for papers and magazines, a reference room for special work, a librarian's room, a delivery room, and shelf space for fifty thousand volumes.

The remainder of the first floor is used for offices, recitation rooms, and a waiting room for women.

On the second floor are more offices and recitation rooms, as well as the botanical and zoölogical laboratories and the museum.

On the third floor is the large hall used as an auditorium, two literary society rooms, and the bell-boy's room.

The building is lighted by gas and electricity, and provided with the most approved system of heating and ventilation.

CONANT HALL.

[Chemical and Physical Laboratories.]

Conant Hall contains the laboratories and lecture rooms for instruction in chemistry, physics, and electrical engineering. It is a substantial brick building, 92 by 70 feet, and three stories high, including the basement. It is heated by steam brought from the shops, is lighted by gas and electricity, and is provided with a system of thorough ventilation. Water, gas, high pressure steam, hydrogen, oxygen, vacuum, and blast are supplied through pipes wherever needed, aud the lecture rooms, in addition, have switches controlling both dynamo and battery currents, and arrangements for stereopticon illustration.

The basement contains a small work shop, the battery, photometer, photographic, and comparator rooms, a clock room protected by double walls against changes of temperature, an acid room, and a water and gas laboratory, provided with the necessary fixtures and appliances.

The first floor, with the exception of one room, is occupied by the physics department. It contains the mineralogical laboratory, which is

provided with tile-covered desks and other facilities for blowpipe analysis; the junior physical laboratory; an apparatus room; a reading and reference room for physical and electrical books and periodicals; an electrical laboratory, from the neighborhood of which masses of iron have been excluded, so that magnetic measurements can be made with a good degree of accuracy; and the physical lecture room, which is provided with all necessary conveniences, as before mentioned. For optical experiments the room can be darkened by means of special window-shutters, operated from one of the lecture desks. A stone pier between the two desks makes it possible to use delicate instruments.

The second floor is given up entirely to the chemical department. It contains store-rooms, an organic laboratory, a qualitative laboratory, a private laboratory, a dark room for polariscopic and spectroscopic work, a lecture room provided with facilities as before described, a quantitative laboratory, and a room to contain the delicate chemical balances and most important reference works.

The laboratories are fitted up with the most modern accessories, and with special reference to the kind of work to be performed in each.

THE SHOP BUILDINGS.

The shops have been planned and built with the object of providing facilities for instruction in the working of wood and metals, and in the design, construction, care, and management of machinery. Incorporated with the shops is a central station for furnishing heat, light, water, and power, wherever needed in any of the college buildings; and the machinery of this station forms a part of the material equipment of the engineering departments.

The main shop building is 42 by 106 feet, and two stories high, with a basement 31 by 42 feet. In a separate one-story building, 40 by 100 feet, on a level with the basement of the main building, are the boiler house, forge shop, coal shed, and foundry.

In the boiler room, three boilers, aggregating one hundred and sixty horse-power, furnish steam to all the college buildings, wherever needed for heating or power. A brick chimney 95 feet high has been built to carry away the waste gases from the furnaces. The coal room provides for the storage of two hundred tons of coal, conveniently near the boilers.

The basement of the main shop building is used as an engine room, containing a forty horse-power engine, furnishing power for the shops

and for the electric lighting; a dynamo for lighting the college buildings and campus; and the large steam pump, which receives water by gravity from the reservoir one half mile distant and forces it through underground mains to the various hydrants and buildings. The engine room serves as a power laboratory, and the machines mentioned, with others, will give to students opportunity for making efficiency tests.

On the first floor of the main shop building, a lavatory is provided. The largest room on this floor is the machine shop, where there is opportunity for practice in the operations of working metals by cutting tools, both by hand work and by machinery.

The second floor of this building is mainly occupied by a wood shop, in which the common branches of carpentry, joinery, and pattern making are taught. Practice is given in the use of carpenter's tools, and in the care and operation of the machines of most general use in woodworking. A well lighted corner of this room is partitioned off, and will be equipped for copying drawings by the blue process. Two office rooms are also provided, one of which will temporarily be used as a recitation room, the other as a drawing room.

The shop buildings are constructed on the "slow-burning" principle, with thick walls and heavy continuous plank floors. The rooms are all well lighted and well ventilated.

APPARATUS, LIBRARY, AND FARM.

The various chemical laboratories are supplied with a full line of such apparatus as is required in each. Besides all necessary glass and porcelain ware, this includes water baths; drying ovens, combustion, muffle, and assay furnaces; platinum dishes and crucibles; polariscope; spectroscope; balances; lantern and other lecture appliances, etc.

The physical laboratory is equipped with a good collection of the usual apparatus for laboratory work and lecture room illustration, to which will be continually added pieces purchased or made in the college shop.

In electricity and magnetism the outfit will include a Thomson ampere balance, a standard Wheatstone's bridge, an Elliott microfarad condenser, four Cahart-Clark standard cells, Deprez-D'Arsonval standard tangent, and astatic galvanometers, besides other instruments of less accuracy.

For more strictly electrical engineering work the department has the five-hundred light alternator used in lighting the college buildings, a direct-current "exciter" dynamo, all the apparatus of a complete fifty-five light Edison isolated electric lighting plant, a Sorley storage battery

of twenty-six cells, arc and incandescent lamps, and standard forms of voltmeter, ammeter, and transformer.

The zoölogical laboratory is well supplied with aquaria, microscopes, dissecting tools, charts, reference-books, collections, etc.

The botanical laboratory is supplied with a good herbarium, microscopes, and the other necessary appliances.

The surveying instruments are sufficient in number and of the most approved pattern.

MUSEUM.

The museum had for a nucleus the collections made during the state geological survey. To this additions have been made from various sources. Many specimens are being collected to illustrate zoölogy—especially entomology. It will occupy a large, well lighted room in the main building.

LIBRARY.

The library of the college consists of about thirty-five hundred bound volumes besides pamphlets. A considerable part of these are new and expensive books, making good working libraries for the different departments of instruction, including economic science and English and American literature.

Students also have the free use of the Durham public library of about thirty-five hundred well selected volumes.

The college supports a reading-room, which is well supplied with the leading American and foreign periodicals.

FARM.

The farm contains more than three hundred acres of valuable land. It has been provided partly from the funds given by Hon. John Conant and partly from the Benjamin Thompson estate.

It is used for the purpose of an experiment station, for which it is considered by leading agriculturists as being especially fitted.

A model barn has been erected, at an expense of about ten thousand dollars.

SITUATION AND RAILROAD CONNECTIONS

Durham is situated on the western division of the Boston & Maine railroad, sixty-two miles from Boston, and about midway between Newmarket Junction and the city of Dover, being five miles from the latter place.

From nearly every part of the state it is easily reached over the Boston & Maine and Concord & Montreal railroads. Each of these roads sells a transferable, unlimited mileage ticket at the rate of two cents per mile.

PECUNIARY AID AND EXPENSES

Tuition is $60 per year, although numerous scholarships give free tuition to many New Hampshire students. The trustees have arranged the scholarships as follows: There are thirty Conant scholarships, each paying $40 and tuition, $60,—total, $100. These are to be assigned under the following conditions: 1. They are to be given to young men taking an agricultural course; 2. Each town in Cheshire county is entitled to one scholarship, and Jaffrey is entitled to two; 3. Scholarships not taken by students from Cheshire county, and those in excess of the number of towns, are to be assigned to agricultural students at the discretion of the Faculty.

There are twenty-four senatorial scholarships—one for each senatorial district. Each scholarship is to pay tuition, $60. Senatorial scholarships not filled can be assigned to students from other localities at the discretion of the Faculty; they are open to students in all courses.

Early application should be made for these scholarships. They will be reserved for those respective towns and districts until August 1 of each year, after which they may be otherwise assigned for the year.

These scholarships are given for the purpose of aiding deserving students, and will be withdrawn from those who use tobacco or intoxicating liquors, or show themselves not deserving. Janitorships, work on the farm, etc., also furnish assistance to a considerable extent.

Expenses may be estimated as follows:

Tuition	Free	$60.00
Text-books	$10.00	20.00
Library and reading-room tax	6.00	6.00
Room rent, including fuel	18.00 to	40.00
Board $3 per week, for 35 weeks	105.00 to	122.50
Total	$139.00	$298.50

Room rent is estimated on the supposition that two students occupy the same room.

Rooms may be obtained either furnished or unfurnished.

For further information, address President Charles S. Murkland, or Prof. C. M. Weed, Secretary of the Faculty.

N. H. AGRICULTURAL EXPERIMENT STATION

This department of the college is provided for by the national government, at an annual expense of fifteen thousand dollars.

The act of congress provides,—

That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping, as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective states or territories.

NESMITH HALL.

Nesmith Hall, a brick building two stories in height, is used for the work of the Agricultural Experiment Station. It contains offices and working rooms, a reference library, a chemical laboratory, a bacteriological and microscopical laboratory, and an agricultural museum.

BOARD OF CONTROL

HON. GEORGE A. WASON, *President*	New Boston.
PRES. CHAS. S. MURKLAND, *ex-officio*	Durham.
CHARLES W. STONE, A. M., *Secretary*	East Andover.
HON. JOHN G. TALLANT	East Concord.
HENRY W. KEYES	Haverhill.

OFFICERS

GEORGE H. WHITCHER, B. S., *Director.*

CHARLES H. PETTEE, A. M., C. E., *Meteorologist.*

ALBERT H. WOOD, B. S., *Superintendent of Dairy Department.*

FRED W. MORSE, B. S., *Chemist.*

HERBERT H. LAMSON, M. D., *Microscopist and Photographer.*

CLARENCE M. WEED, D. SC., *Entomologist.*

DAVID E. STONE, B. S., *Station Farmer.*

EDWARD P. STONE, B. S., *Assistant Chemist.*

FRED D. FULLER, B. S., *Assistant in Chemistry.*

PRIZE RECORD FOR 1893

SMYTH PRIZES

Given by Hon. Frederick Smyth, of Manchester, N. H.

Not awarded.

JESUP PRIZES

Given by Professor Jesup for Best Herbariums.

1st, Mary M. Smith, Plymouth.

2d, Delbert A. Wheeler, South Ashburnham, Mass.

BAILEY CHEMICAL PRIZE

Given by Dr. C. H. Bailey, of Gardner, Mass., and E. A. Bailey, B. S., of Winchendon, Mass.

Wilton E. Britton, Gilsum.

ERSKINE MASON MEMORIAL PRIZE

Frank John Bryant, Enfield.

ENTRANCE EXAMINATION PAPERS*

I. ENGLISH

The composition should be correct in spelling, grammar, and punctuation, and should show a clear purpose and an orderly method.

1. Write at least three pages on one of the following subjects:
   (1.) The story of Evangeline.
   (2.) Was Brutus a traitor?
   (3.) Webster's style.
2. Correct the errors in the following sentences:
   (1.) The boy stood on the burning deck,
   Whence all but he had fled.
   (2.) I am going and see him this afternoon.
   (3.) He had n't seen what he had ought to do.
   (4.) Get up on to the platform.
   (5.) Try and read as many a good book as you can.
   (6.) I guess he will resign, for he told he was going to.
3. What is the proper difference (if any) in meaning between the two following:
   I would do it if I could. I should do it if I could.
4. Which is the right expression:
   He felt badly at his loss, or, He felt bad at his loss. If you substitute "discouraged" for "badly" or "bad" in the above, what part of speech will it be?

II. GEOGRAPHY

1. Name and describe the river systems of North America.
2. Name the political divisions of Asia; give the situation of each.
3. Give a general description of Africa; state its size, situation, and physical characteristics.
4. What states of the United States may be called cotton states? What grain states?

* Given as specimens of average papers.

5. What mountains between France and Italy? For what are they celebrated?

6. Give the situation of each of the following islands: Prince Edward, Jamaica, Vancouver, Sumatra.

7. Give the situation of each of the following seas: White, Aral, Yellow, Azof.

8. Give the situation of each of the following mountains: Ural, Carpathian, Caucasus, Kong.

9. Locate and describe each of the following rivers: Senegal, Volga, Indus, Clyde.

10. Locate and describe each of the following cities: Glasgow, Naples, Duluth, Tangiers.

III. AMERICAN HISTORY

1. Give a brief account of the conquest of Peru.

2. What nations held territory in North America during the seventeenth century? What did each nation hold?

3. Give an account of King Philip's War.

4. Give an outline of the French and Indian War.

5. Give a brief but comprehensive account of the Siege of Yorktown (1781).

6. Give a brief account of the adoption of the Constitution.

7. Give the causes and results of the Mexican War.

8. Give a brief account of each acquisition of United States territory.

9. Give an account of the principal military operations during the year 1864.

10. Explain the Emancipation Proclamation and the Alabama claims.

IV. PHYSIOLOGY

1. Explain the structure of the bones. Name in their order those of the limbs.

2. Define the terms, *cartilage*, *ligaments*, *tendons*.

3. Explain the process of digestion. What four solvents act upon the food?

4. How is the blood purified?

5. What is the origin of the nerves that regulate sensation and motion? What the origin of those that regulate digestion?

6. Describe the organ of hearing.

7. Describe the organ of sight.

8. What is the effect of alcohol upon digestion? upon the liver and kidneys?

V. ARITHMETIC

1. Reduce $\frac{12012}{103740}$ to its lowest terms.

2. Divide $\frac{3}{2}$ of $\frac{5}{6}$ by $\frac{\frac{5}{3}}{\frac{4}{6}}$ and subtract the quotient from $\frac{2\frac{1}{2}}{4-\frac{2}{3}}$

3. How many hectares in a rectangular piece of land 500 meters long and 25 meters wide.

4. The population of a certain city is 100,000. It has gained 20,000; what has been the gain per cent?

Extract the square root of $\frac{6\frac{1}{4}}{2\frac{1}{4}}$ to five decimal places.

6. If 4 men build 19 rods of wall in $2\frac{1}{2}$ days, in how many days will 7 men build 20 rods?

7. A, B, and C formed a partnership, and cleared $12,000. A put in $8,000 for 4 months, and then added $2,000 for 6 months; B put in $16,000 for 3 months, and then, withdrawing half his capital, continued the remainder for 5 months longer; C put in $13,500 for 7 months. How divide the profits?

8. Find the simple, the annual, and the compound interest on $1,000 for 2 years, 5 months, and 7 days, at 6 per cent.

VI. ALGEBRA

Define algebra, formula, coefficient, power, root, exponent, radical, term, factor, similar quantities.

2. From $3ax^2-(4a-2x)(x+2a)+a[y-(a+2y)]$ subtract $5a(x-y)+3a^2-2x^2(a+1)$.

3. Multiply $a^2x^{\frac{1}{3}}-3x$ by $b+2x^{\frac{2}{3}}$.

4. Divide $4a^2y^3x^{\frac{2}{3}}$ by $-2a^3yx^2$.

5. $4x-5y=10$, and $3x+12y=7$. Solve for x and y.

6. Factor a^3-x^3; a^3+x^3; and a^4-x^4.

7. The sum of two numbers is a, and their difference is b. What are the numbers?

8. Multiply $\sqrt{-x}$, $-\sqrt{-y}$, $-\sqrt{y}$, and $\sqrt{y}$.

9. $\sqrt{x-16}=8-\sqrt{x}$. Solve for x.

VII. PLANE GEOMETRY

1. Define geometry, proposition, theorem, problem, axiom, postulate, corollary, scholium, right angle, perpendicular, parallel, magnitude, and form.

2. Define trapezoid, rhombus, regular polygon, apothem, sector of a circle, and segment of a circle. Name and explain the different kinds of triangles.

3. Give expressions for the circumference and area of a circle. State the relations existing between similar areas.

4. Demonstrate that if a perpendicular be erected at the middle of a line, any point in that perpendicular is equally distant from the extremities of the line; also that any point without is nearer the extremity on its own side of the perpendicular.

5. Demonstrate that if two lines are cut by a third, making the sum of the interior angles on the same side of the secant line equal to two right angles, the two lines are parallel.

6. Demonstrate that in the same or equal circles two incommensurable arcs are to each other as the angles which they subtend at the centre.

7. Demonstrate that the opposite sides of a parallelogram are equal.

8. Demonstrate that triangles mutually equiangular are similar.

9. Construct a fourth proportional to three lines.

EXAMINATIONS FOR ADVANCED STANDING

Students passing the examinations in Ancient, Mediæval, and Modern History can take French in place of the History of the first year.

I. ANCIENT HISTORY

1. Describe the Accadian libraries, and explain the manner in which they have been preserved.

2. Give an outline of the story of the War of the Seven against Thebes.

3. Compare the laws of Lycurgus with those of Solon.

4. Describe the different orders of Grecian architecture. Briefly describe the Parthenon.

5. Who were the great tragic poets of the Greeks? Upon what subjects did they write?

6. Give some account of the Stoics and the Epicureans.

7. Name and locate the natural entrances into the basin of the Mediterranean.

8. State the six provisions of the Licinian laws. Which provisions were effective?

9. Give an outline of the history of the second Samnite War.

10. Locate and, with a sentence for each, describe the following: Olympia, Ægina, Delphi, Thebes, Tarentum, Pannonia, Numidia, Etruria, Mauritania, Sardinia.

II. MEDIÆVAL HISTORY

1. Give an outline of the history of the kingdom of the Ostrogoths.

2. Explain the meaning of each of the following words: Janizaries, reliefs, escheats, aids, villeins.

3. What were the characteristics which distinguished the early Teutons?

4. Give an account of the Third Crusade.

5. In one hundred words give the history of Spain from A. D. 700 to A. D. 1500.

6. In the same number of words give the history of the Wars of the Roses.

7–8. Describe the following, using about fifty words for each: Tamerlane, Warwick (the "king-maker"), Simon de Montfort, Huss.

9. Give an account of cathedral building.

10. Draw a map showing the political divisions of Europe at the close of the Middle Ages.

III. MODERN HISTORY

1. Explain the causes that checked the progress of the Reformation.

2. Give an account of the Battle of Lepanto.

3. Give an account of the religious changes which took place in England during the Tudor period.

4. Give the history of the siege of Leyden.

5. Give an account of Catherine de Medici.

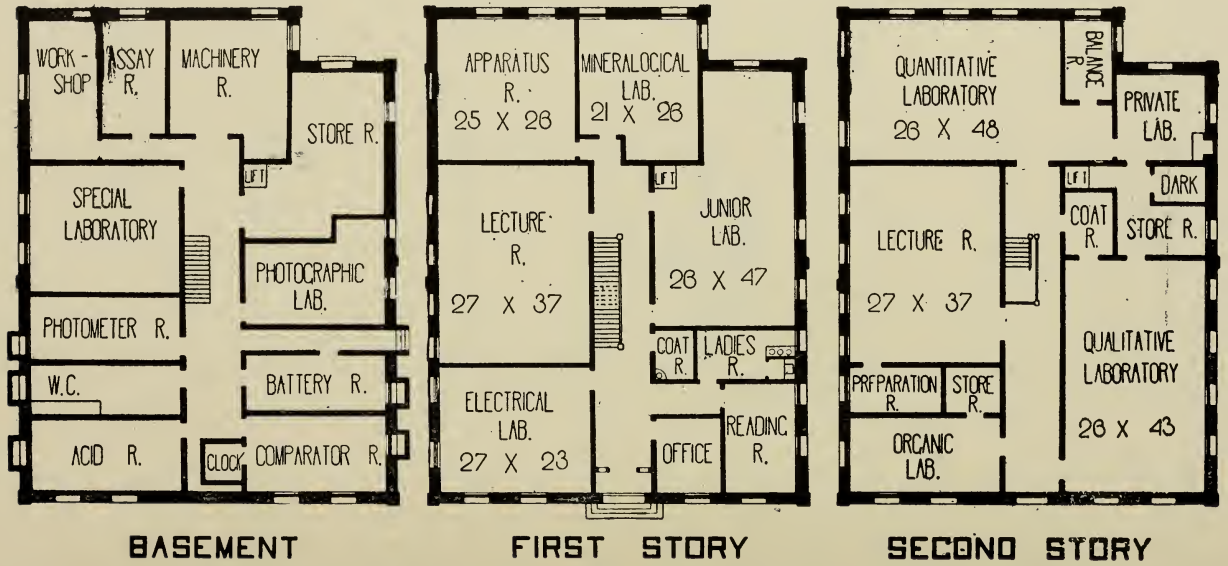
6. Give the history of the war undertaken by Louis XIV against Holland.

7. Give an account of the English revolution of 1688.

8. Give a brief account of each of the revolutions in France since 1815.

9. Give an outline of the history of the unification of Italy.

10. Draw a map showing the south-eastern part of Europe and the present political divisions.



Conant Hall, Floor Plans.

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CATALOGUE OF GRADUATES

NOTE.—The arrangement is : (*a*) Name in full. (*b*) Degrees taken. (*c*) Residence at time of entering college. (*d*) Occupation, etc. (*e*) Present residence.

1871.

William Preston Ballard, B. S., Concord. Farmer. *Concord.*

Lewis Perkins, B. S., Hampton. Civil Engineer. *North Adams, Mass.*

Charles Henry Sanders, B. S., Penacook. Architect and Merchant. *Penacook.*

3—

1872.

Edwin Bartlett, B. S., Bath. Farmer. County treasurer, 1883. *Kinsley, Edwards Co., Kan.*

Frank Alexander White, B. S., Bow. Farmer. *Bow.*

2—

1873.

Frederick Erasmus Eldredge, B. S., Kensington. Lawyer. *Tacoma, Wash.*

James Fred Smith, B. S., A. M. (1885). Instructor in Iowa College. *Grinnell, Iowa.*

Charles Henry Tucker, B. S., Plaistow. Carriage Maker. *Amesbury, Mass.*

3—

1874.

Millard Fillmore Hardy, B. S., Nelson. Graduated Theo. Inst. Ct., 1878. Clergyman. *Harrisville.*

Henry Abbott Sawyer, B. S., North Weare. Business. *North Weare.*

2—

1875.

Walter Herman Aldrich, B. S., M. D. (Univ. N. Y. City, 1880), Troy. Physician. *Marlborough.*

Frank Pierce Curtis, B. S., Stoddard. Manager of Store. *Greenfield, Mass.*

Frank Veranus Emerson, B. S., Lebanon. Manufacturer. *East Lebanon.*

Charles Webster Hardy, B. S., M. D. (Mo. Med. Coll., 1881), Marlborough. Physician. *Waterville, Kan.*

Harvey Jewell, B. S., Winchester. Farmer. *Winchester.*

Charles Ormille Leavitt, B. S.,* Lebanon. Farmer. Died, 1877.

John Loney McGregor, B. S., D. D. S. (Phila. Dental Coll., 1877), M. D. (1883), Whitefield. Physician. *Whitefield.*

Eliel Peck, B. S., Lebanon. Farmer and Printer, 1875–'80. Merchant. *Kimball, Minn.*

Ira William Ramsay, B. S., Walpole. Farmer. *Walpole.*

Orlando Leslie Seward, B. S., Keene. Architect. *Keene.*

Emery Mason Willard, B. S., Harrisville. Drug clerk. 15 *Union St., Boston, Mass.*

11—*1

1876.

Herbert Cyril Aldrich, B. S., Troy. Insurance Agent. *Keene*

Edmund Lawson Brigham, B. S., Jaffrey. Manufacturer. *Clinton, Mass.*

Joseph Warren Butterfield, B. S., Westmoreland. Farmer. *North Montpelier, Vt.*

Arthur Frank Chamberlain, B. S., Westmoreland. Commercial Traveler. 6543 *Woodlawn Park, Chicago, Ill.*

Anson Ballard Cross, B. S., Holyoke, Mass. Paper Maker. *Readsborough, Vt.*

Warren Webster Kimball, B. S., Troy. Merchant. *Troy.*

Daniel Deeth Parker, B. S., Fitzwilliam. Manufacturer. *Gardner, Mass.*

7—

1877.

Rollin Kirk Adair, B. S., Indian Territory. Farmer. *Locust Grove, Cherokee Nation, Indian Ter.*

Homer Brooks, B. S., M. D. (N. Y. Hom. Med. Coll., 1881), Franconia. Physician. 342 *Washington St., Haverhill, Mass.*

John Washington Carson, B. S., Mont Vernon. Farmer. *Mont Vernon.*

Charles Otto Chubert, B. S.,* Troy. Died.

Charles Albert Edwards, B. S., LL. B.* (State Univ., Iowa, 1880), Keene. Lawyer. Died, 1886.

William Francis Flint, B. S., Richmond. Farmer. *Winchester.*
Clinton Camillus Hall, B. S., Westmoreland. Farmer. *East Westmoreland.*
John Goodrich Henry, B. S., M. D. (1880), Chesterfield. Physician. *Winchendon, Mass.*
Charles Pitkin Hollister, B. S., North Montpelier, Vt. Farmer. *North Montpelier, Vt.*
George Mirick Holman, B. S., M. D., Fitchburg, Mass. Instructor in Bryant & Stratton's Commercial College. *Boston, Mass.*
Charles Appleton Hubbard, B. S., Troy, Clerk. *Newton, Mass.*
Charles Augustus Wheeler, B. S., East Calais, Vt. Farmer. *Bracken, Coral Co., Texas.*
Everard Whittemore, B. S., Fitzwilliam. Merchant. *Hudson, Mass.*

13—*2

1878.

Ezra Eastman Adams, B. S., Manchester. Auctioneer. 237 *and* 249 *Monroe St., Chicago, Ill.*
Elmer Kilburn, B. S., C. E.,* Marlow. Civil Engineer. Died 1881.
Charles Edward Record, B. S., Fitchburg, Mass. Farmer, *Fitchburg, Mass.*

3—*1

1879.

Charles Hardy Bailey, B. S., M. D. (1881). Physician. *Gardner, Mass.*
Richard Clinton Chapin, B. S., Chicopee, Mass. Agent for Nonotuck Paper Company. *Holyoke, Mass.*
Lucius M. Cragin, B. S., Lempster. Farmer. *Springfield, Vt.*
Nathaniel Cutter Holmes, B. S.,* Amherst. Lawyer. Died, 1887.
Fred Charles Parker, B. S., Lempster. Merchant. *Acworth.*
George Henry Wilkins, B. S., M. D. (N. Y. Hom. Med. Coll., 1883), Amherst. Physician. *Palmer, Mass.*

6—*1

1880.

Charles Harvey Hood, B. S., Derry. Farmer. *Derry.*

1—

1881.

Edwin Thomas Aldrich, B. S., Troy. Insurance Clerk. *Keene.*
Henry Lyman Barnard, Troy. Clerk. *Troy.*
George Jordan Boardman, B. S.,* Lawrence, Mass. Medical Student. Died, 1886.

Edwin Franklin Bristol, B. S., Harwinton, Conn. Mechanic. *Ascutneyville, Vt.*

Artemas Terald Burleigh, B. Y., Franklin. Merchant. *Tilton.*

Frank Dana Ely, B. S., Cavendish, Vt. Business. *Cavendish, Vt.*

Sanford Eugene Emery, B. S., LL. D. (Albany Law School, 1886), Proctorsville, Vt. Lawyer. *Proctorsville, Vt.*

Charles Herbert Hazen, B. S., Hartford, Vt. Farmer. *Hartford, Vt.*

Frank Marston, B. S., Hartford, Vt. Business. *Olcott Falls, Vt.*

William Augustus Megrath, B. S., M. D. (1885), Cavendish, Vt., Physician. *Loudon.*

Fred Townsend Stanton, B. S., Strafford. Farmer. *Strafford Corner.*

Victor Hugo Stickney, B. S., M. D. (1883), Tyson, Vt. Physician. *Dickinson, Dak.*

Samuel Austin Wallace, B. S., Ph. G. (Boston School of Pharmacy, 1886), West Hartford, Vt. Druggist. *Crookstone, Minn.*

George Herbert Whitcher, B. S. Strafford. Professor of Agriculture, and Director of Experiment Station. *Durham.*

14—*1

1882.

Harvey Lincoln Boutwell, B. S., LL. B. (Boston Univ., 1886), Hopkinton. Lawyer. 209 *Washington St., Boston, Mass.*

Dana Justin Bugbee, B. S., North Pomfret, Vt. Agent for Publishers. *North Pomfret, Vt.*

Robert Fletcher Burleigh, B. S., D. V. S. (Am. Veterinary Coll., 1885), M. D. (1887), Franklin. Instructor in Veterinary Science, 1885–'88. Professor of Physiology and Veterinary Science, Kansas State Agricultural College, 1888–'89. Physician. *Rochester.*

La Forrest John Carpenter, B. S., Surry.

Edwin Preston Dewey, B. S., Hanover. Civil Engineer. *Malden, Mass.*

George Andrew Loveland, B. S., LL. B. (Univ. of N. Y., 1886), Norwich, Vt. Weather Bureau. *Crete, Neb.*

John Wright Mason, B. S., Hanover. Business. *Des Moines, Iowa.*

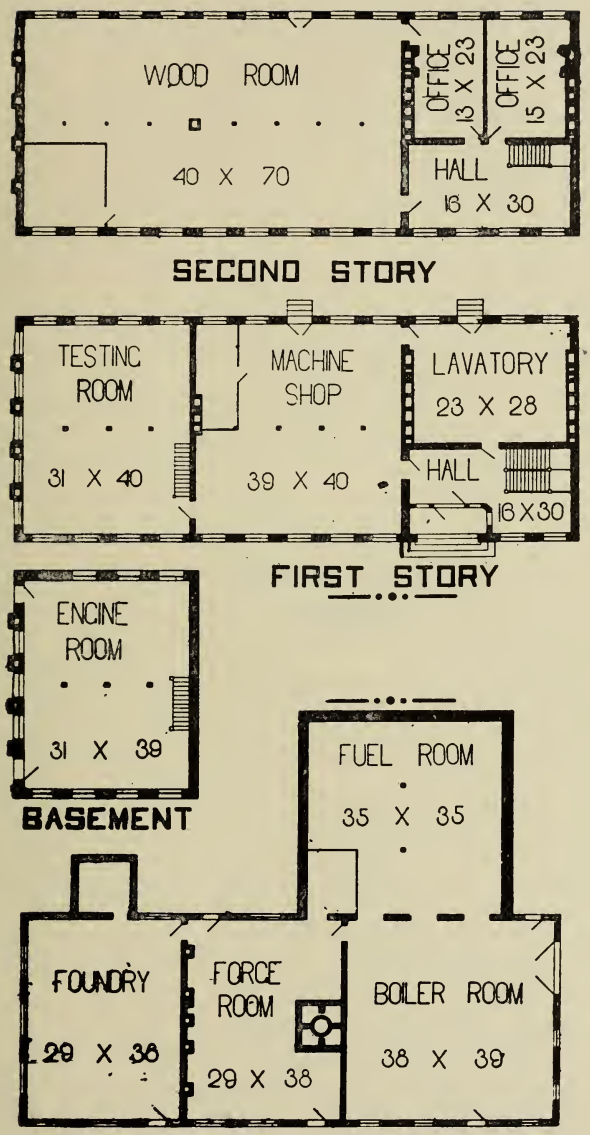
Harlan Addison Nichols, B. S., Derry. Weather Bureau. *Colorado, Texas.*

Frank Elmer Thompson, B. S., Stark. Lumberman. *Ridgeway, Penn.*

9—

1883.

Elmore Ferdinand Arnold, B. S., M. D. (Univ. City N. Y., 1885), Londonderry, Vt. Physician. *Londonderry, Vt.*



SHOPS, FLOOR PLANS.

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Frank Landor Bigelow, B. S., Proctorsville, Vt. Instructor in Mathematics and Sciences, Goddard Seminary, Barre, Vt., 1883–'86. Business. *Rutland, Vt.*

Frederick Stocks Birtwhistle, B. S., Troy. With American Consulate. *Cartagena, Colombia, S. A.*

Noice D. Bristol, B. S., Harwinton, Conn. Clergyman. *Hamilton, Kan.*

Fred Plummer Comings, B. S., Lee. Teacher. *South Yarmouth, Mass.*

Frank Harry Follansbee, B. S., Canaan. Railway Mail Clerk. *Canaan.*

Adams Clark French, B. S., Franklin Falls. Theological Student. *Chicago, Ill.*

James Edgar Gay, B. S., Tunbridge, Vt. Woolen Manufacturer. *Cavendish, Vt.*

Elmer Daniel Kelley, B. S., Franklin Falls. Farmer. *Franklin Falls.*

Alvah Benjamin Morgan, B. S., Canaan. Drug Clerk. *Lebanon.*

William Lincoln Whittier, B. S., Deerfield. Farmer. *Deerfield.*

Charles Minot Woodward, B. S., Hanover. Instructor in Agriculture, 1883–'84. Teacher. *Corsicana, Texas.*

12—

1884.

Ernest Smith Cummings, B. S.,* Lee. U. S. Signal Service. Died 1886.

Fred Carlos Davis, B. S., South Reading, Vt. Lawyer. *Springfield, Vt.*

Sylvester Miller Foster, B. S., Riverhead, L. I. Insurance Agent. *Riverhead, L. I.*

Herbert Harvey Kimball, B. S., Hopkinton. Weather Bureau. *Washington, D. C.*

Moses Bisbee Mann, B. S., Benton. Custom House Official. 74 *Upham St., Malden, Mass.*

George Milton Moore, Plymouth, Vt., Merchant. *Tyson, Vt.*

Ziba Amherst Norris, B. S., Lyme. Merchant. 1677 *Washington St., Boston, Mass.*

Edwin Chapin Thompson, B. S., Lee. Weather Bureau. *St. Paul, Minn.*

8—*1

1885.

George Ellsworth Adams, B. S., Weston, Vt. Weather Bureau. *Fort Duchesne, Utah.*

Ruel Seabury Alden, B. S., Lyme. Superintendent of Asylum Farm. *Concord.*

Walter Eugene Angier, B. S., C. E. (1887), West Swanzey. Civil Engineer. *Memphis, Tenn.*

Edward Alonzo Bailey, B. S., West Swanzey. Attendant in Insane Asylum. *Winchendon, Mass.*

Phillips Greenleaf Bickford, B. S., Lyme. Teacher. *Farmington, Wash.*

Andrew Walter Brill, B. S., Riverhead, L. I. Seedsman and Florist. *Floral Park, Queens Co., N. Y.*

Paul Cuff Brooks, B. S., Boston, Mass. Clerk. 25 *Westminister St., Boston, Mass.*

Frank Jay Emerson, B. S., Epping. Clerk. *Portsmouth.*

Allen, Hazen, B. S., Hartford, Vt. Chemist of State Board of Health. *Lawrence, Mass.*

George Mayo Mullins, B. S., Londonderry. Farmer. *North Londonderry.*

Albert Henry Wood, B. S., Lebanon. Associate Professor of Agriture. *Durham.*

11—

1886.

Frank Albert Davis, B. S., South Lee. Weather Bureau. *Boston, Mass.*

James Ellsworth Harvey, B. S., Surry. Photographer. *Surry.*

Belezar Stoianoff Ruevsky, B. S., Sistova, Bulgaria. Student of Veterinary Science. *Sistova, Bulgaria.*

Madison Templeton Thurber, B. S., Webster. Physician. *Grafton.*

Edward Hills Wason, B. S., New Boston. Lawyer. *Nashua.*

George Pilsbury Wood, B. S., Lebanon. Civil Engineer. *Roanoke, Va.*

6—

1887.

William Sprague Currier, B. S., Norwich, Vt. Weather Bureau. *Cleveland, Ohio.*

Arthur Woodbury Hardy, B. S., C. E. (1889). Hopkinton. Civil Engineer. *City Engineer's Office, Salt Lake City, Utah.*

George Albert Sanborn, B. S., Rochester. Teacher. *Rochester.*

Hiram Newton Savage, B. S., White River Junction, Vt. Engineer of San Diego Land Improvement Co. *National City, Cal.*

Bion Leland Waldron, B. S., Strafford. Weather Bureau. *Galveston, Texas.*

5—

1888.

Melvin Burnside Carr, B. S., North Haverhill. *Boston, Mass.*
Herbert Grant Davis, B. S., South Lee. Thomson-Houston Co. *Lynn, Mass.*
Edwin Chandler Gerrish, B. S., Webster. Civil Engineer. Office of Locks and Canals. *Lowell, Mass.*
William Nelson Hazen, B. S., C. E. (1890), Hartford, Vt. Civil Engineer. *East Berlin, Conn.*
Edward David O'Gara, Hanover. Farmer. *Hanover.*
George Elmer Porter, B. S., M. D. (1892). Hartford, Vt. Physician. *Chatham, Mass.*
George Jonathan Sargent, B. S., Canterbury. Civil Engineer. Office of Locks and Canals. *Lowell, Mass.*
John Warren Smith, B. S., Grafton. Weather Bureau. *Boston, Mass.*
George Elwin Walker, B. S., Littleton. Farmer. *Littleton.*

9—

1889.

Fred Harvey Colby, B. S., Hopkinton. Civil Engineer. *Zillah, Yakima Co., Wash.*
Linwood Carroll Gillis, B. S. Editor and Publisher. *Hanover.*
Louis Jerome Hutchinson, B. S., Norwich, Vt. Electrician. *Boston, Mass.*
John Lawrence Norris, B. S., Lyme. Clerk. 1677 *Washington St., Boston, Mass.*
Charles Walter Earl Scott, B. S., Winchester. Clerk. *Winchester.*
David Elmer Stone, B. S., Hartford, Vt. Station Farmer. *Durham.*
Fred Washburn, B. S., West Springfield. Business. *Laconia.*

7—

1890.

John Young Jewett, B. S., Gilford. Student in Thayer School of Civil Engineering. *Hanover.*
Joseph Franklin Preston, B. S., Hanover. Clerk. 570 *Columbus Avenue, Boston, Mass.*
Elihu Quimby Sanborn, B. S., Webster. Machinist.
Clarence Ira Slack, B. S., Norwich, Vt. With Vermont Marble Co. *West Rutland, Vt.*

4—

1891.

Ernest Gowell Cole, B. S., Hampton. Merchant. *Hampton.*
Russell Marden Everett, B. S., Chester. Teacher. *Dover, N. J.*
Edward Payson Stone, B. S., Canaan Centre. Assistant Chemist of Experiment Station. *Durham.*

3—

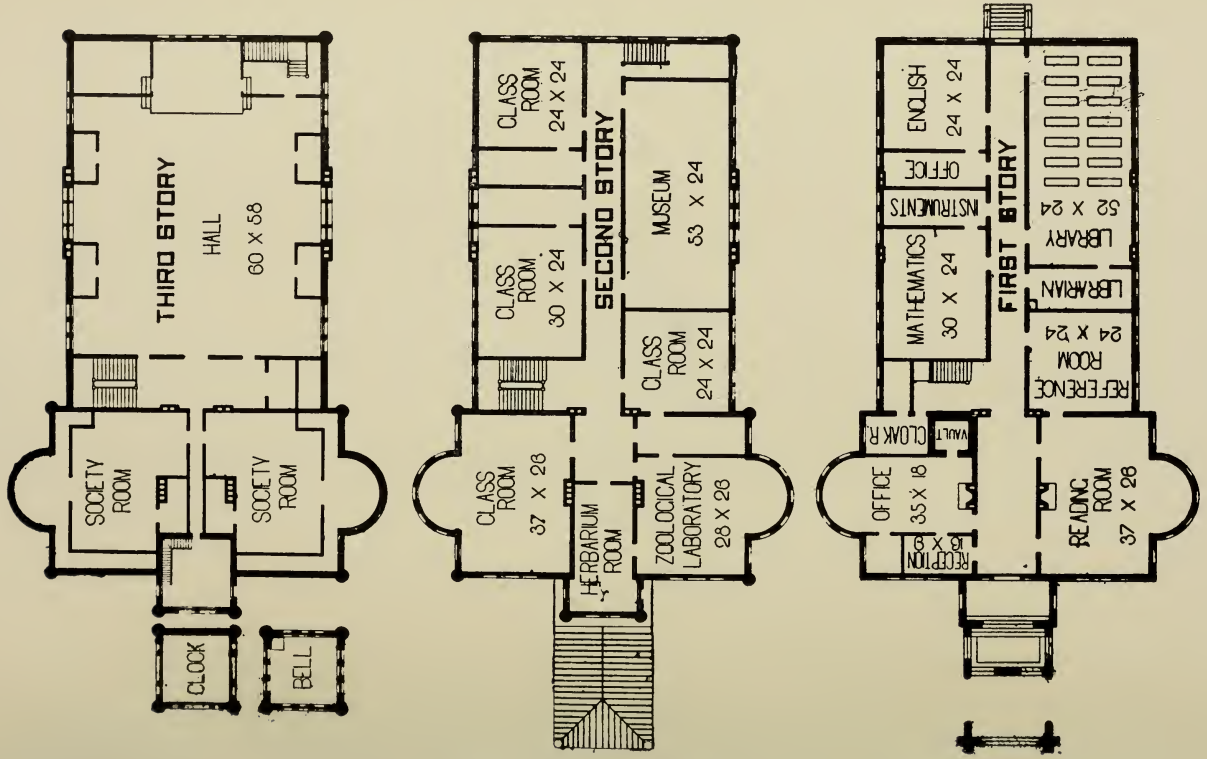
1892.

Percy Lovejoy Barker, B. S., Milford. Student in Thayer School of Civil Engineering. *Hanover.*
Fred Driggs Fuller, B. S., Hanover. Assistant in Chemistry. Experiment Station. *Durham.*
Arthur Bennerzett Hough, B. S., Lebanon. Farmer. *Lebanon.*
Edward Monroe Stone, B. S., Marlborough. Student in Thayer School of Civil Engineering. *Hanover.*

4—

1893.

Wilton Everett Briton, B. S., Keene. Post Graduate Student in Horticulture. *Cornell University, Ithaca, N. Y.*
Frank John Bryant, B. S., Enfield. Teacher. *Enfield.*
Charles Elbert Hewitt, B. S., Hanover. Post Graduate Student in Electrical Engineering. *Cornell University, Ithaca, N. Y.*
Charles Lincoln Hubbard, B. S., Fitzwilliam. Post Graduate Student in Mechanical Engineering. *Cornell University, Ithaca, N. Y.*
Orrin Moses James, B. S., Northwood, Civil Engineer. *Northwood Narrows.*
Arthur Whitmore Smith, B. S., Norwich, Vt. Post Graduate Student in Electrical Engineering. *Cornell University, Ithaca, N. Y.*



Thompson Hall, Floor Plans.

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SUMMARY.

Graduates, 1871–'93, inclusive (living, 142; dead, 7)	149
Agriculturalists	30
Architects	2
Business pursuits	39
Chemists	3
Clergymen	2
Civil and Mechanical Engineers	11
Electricians	1
Lawyers	5
Manufacturers and Mechanics	8
Physicians	13
Post Graduate Students	7
Teachers	10
Unclassified	2
Unknown	2
Weather Bureau	9
Twice classified	2
Students in attendance Oct., 1892, to Oct., 1893	84
Number connected with college, 1871 to 1893, inclusive	380

CATALOGUE

OF THE

New Hampshire College

OF

Agriculture and the Mechanic Arts.

1894-'95.

THE
JOHN CRERAR
LIBRARY.

Bird's-eye View of New Hampshire College Buildings.

CATALOGUE

OF THE

NEW HAMPSHIRE COLLEGE

OF

AGRICULTURE

AND THE

MECHANIC ARTS

1894-1895

DURHAM
NEW HAMPSHIRE COLLEGE
1894

117

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CATALOGUE

CATALOGUE

OF THE

NEW HAMPSHIRE COLLEGE OF AGRICULTURE AND THE MECHANIC ARTS

1894–1895

At the session of the legislature of New Hampshire in 1866, an act was passed establishing the "New Hampshire College of Agriculture and the Mechanic Arts" on the basis of the congressional land grant, and authorizing its location in Hanover and connection with Dartmouth college.

In accordance with this act, the institution was organized under a board of trustees, appointed partly by the governor and council and partly by the corporation of Dartmouth college.

The act of congress, by virtue of which it was established, provides that its "leading objects shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts . . . in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

An act of congress, approved August 30, 1890, provides an additional appropriation, which for the current year is twenty thousand dollars, and which is to be increased until it becomes twenty-five thousand dollars a year. This money is to be applied "to instruction in Agriculture, the Mechanic Arts, the English Language, and the various branches of Mathematical, Physical, Natural, and Economic Science, with special reference to their applications in the industries of life, and to the facilities for such instruction."

At the session of the legislature of New Hampshire in 1891, acts were passed severing the connection with Dartmouth college and removing the New Hampshire college from Hanover to Durham; accepting the Benjamin Thompson estate, which was then of the value of about four hundred thousand dollars, and, accumulating at four per cent. compound interest, will be available as an endowment in 1910; and providing one hundred thousand dollars to be used with certain other sums in the erection of buildings.

At the session of the legislature of New Hampshire in 1893, an act was passed appropriating thirty-five thousand dollars for completing and furnishing the buildings. These buildings have been finished, furnished, and supplied with apparatus. The New Hampshire college has completed the first year of work in its new location.

The college is carrying out the provisions of the acts of congress, by giving a practical and scientific education, which is of use in all the professions and industrial pursuits, by means of the following courses of study:

1. Courses in Agriculture:
   - A. Technical Course.
   - B. Chemical "
   - C. Biological "
   - D. Institute "
   - E. Non-resident "
2. Courses in the Mechanic Arts:
   - A. Mechanical Engineering Course.
   - B. Electrical Engineering "
   - C. Technical Chemistry "
3. General Course.

FACULTY

CHARLES S. MURKLAND, A. M., PH. D.. *President and Professor of English Language and Literature.*

CHARLES H. PETTEE, A. M., C. E., *Dean and Professor of Mathematics and Civil Engineering.*

CLARENCE W. SCOTT, A. M., *Professor of History and Political Economy.*

GEORGE H. WHITCHER, B. S., *Professor of Agriculture.*

ALBERT H. WOOD, B. S., *Associate Professor of Agriculture.*

FRED W. MORSE, B. S., *Professor of Organic Chemistry.*

CHARLES L. PARSONS, B. S., *Professor of General and Analytical Chemistry.*

CLARENCE M. WEED, D. SC., *Professor of Zoölogy and Entomology.*

ALBERT KINGSBURY, M. E., *Professor of Mechanical Engineering.*

HENRY C. HODGES, JR., FIRST LIEUTENANT, U. S. A., *Professor of Military Science.*

HERBERT H. LAMSON, M. D., *Instructor in Plant Diseases.*

GEORGE L. TEEPLE, M. E., *Instructor in Electrical Engineering and Physics.*

EDWIN B. DAVIS,* B. L., *Instructor in Modern Languages.*

JAMES HALL, *Instructor in Freehand Drawing.*

R. W. E. BASSETT, A. M., *Instructor in Modern Languages.*

CHARLES H. CLARK, A. M., *Instructor in Botany in the Summer School.*

JOHN N. BROWN, *Foreman of Machine Work.*

ALLEN G. LOWELL, *Foreman of Wood Work.*

EDWARD E. RUSSELL, *Engineer and Curator of Buildings.*

* Absent on leave.

STUDENTS

a—Agricultural Course; *c*—Course in Technical Chemistry; *m*—Mechanical Engineering Course; *g*—General Course.

SENIORS

Name.	Residence.	Room.
Adams, Frank Stanley *g*	*Gilsum.*	Nesmith Hall.
Britton, Frank Clifton *a* *	*Keene.*	Nesmith Hall.
Hill, Henry Elmer *g*	*Hanover.*	Thompson Hall.
Trow, Charles Arthur *m*	*Mt. Vernon.*	DeMeritt Hall.

JUNIORS

Kittredge, Lewis Harris *a*	*Keene.*	Hoitt House.
Wheeler, Delbert Amos *a*	*South Ashburnham, Mass.*	Prof. Scott's.
Hancock, Edward H. *m*	*Newton.*	Nesmith Hall.

SOPHOMORES

Barney, Harlan Winifred	*Grafton.*	Hoitt House.
Bartlett, Carrie Augusta *	*Lee.*	
Bartlett, Mary Blaisdell	*Epping.*	
Bartlett, David Burns	*Manchester.*	Prof. Scott's.
Berry, Walter Lincoln	*Lebanon.*	DeMeritt Hall.
Buck, Walter French	*Manchester.*	
Bunker, Mabel Eliza *	*Durham.*	Mr. J. J. Bunker's.
Chamberlin, Abby Florence	*Durham.*	Mr. Chamberlin's.
Chamberlin, George Hoitt *	*Durham.*	Mr. Chamberlin's.
Coe, John William	*South Newmarket.*	Mrs. Mathes's.
Colburn, Arthur Willard *	*Dracut, Mass.*	Nesmith Hall.
Comings, Carrie Lydia	*Durham.*	Mr. A. L. Comings's.
Comings, Mary Elizabeth	*Durham.*	Mr. A. L. Comings's.
Davis, Albert Herman *	*Durham.*	Mrs. A. L. Davis's.
Dennett, Irving Lyford	*Barnstead.*	Prof. Scott's.
Dockam, Charles Henry	*Newmarket.*	Newmarket.
Eastman, Eugene Bruce	*Portsmouth.*	Mr. C. Hoitt's.
Forristall, Elwin Henry	*Colebrook.*	Prof. Scott's.
Folsom, Emily Savage	*Dover.*	98 Silver St., Dover.
Foss, Fred Nathan	*Greenland.*	DeMeritt Hall.
Hayes, Leslie David	*Durham.*	Mr. Hayes's.

* Partial Course.

Name.	Residence.	Room.
Hunt, John Norton	*Peterborough.*	Mr. J. B. Nelson's.
Jenkins, Elery Dunbar	*Lee.*	Mr. J. E. Jenkins's.
Kenney, Lewis Hobart	*Pownal, Me.*	Prof. Wood's.
Mason, Woodruff	*Durham.*	Prof. Kingsbury's.
McKenna, George Thomas	*Exeter.*	Mr. Schoonmaker's.
Russell, William Fenno	*Lebanon.*	Mr. J. B. Nelson's.
Rand, Lewis Meader	*Newmarket.*	Newmarket.
Shaw, John Langdon Tallant	*North Chichester.*	Nesmith Hall.
Smith, Daniel Rundlett	*East Epping.*	Mr. C. Hoitt's.
Vickery, Charles William	*Dover.*	36 Summer St., Dover.
Whittemore, Everett Sydney	*Colebrook.*	Mr. J. B. Nelson's.
Wiggin, Tappan Sanborn	*Henniker.*	Creamery.
Young, Perley Arthur	*Newmarket.*	DeMeritt Hall.

FRESHMEN

Blodgett, Herbert Ralph	*Littleton.*	DeMeritt Hall.
Butterfield, Richard Cope	*Westmoreland.*	Mr. Chamberlin's.
Buzzell, Helen	*Lee.*	Lee.
Caverno, Bernice Elizabeth	*Lee.*	Lee.
Chamberlain, Henry Morse	*Marlboro, Mass.*	DeMeritt Hall.
Chase, Frank Rufus	*Epping.*	Thompson Hall.
Clarke, Frank Burnham	*Enfield.*	Creamery.
Coleman, James Albert	*Dover.*	Mr. Chamberlin's.
Corbett, Burton Albert	*Colebrook.*	Mr. J. B. Nelson's.
Chesley, Elizabeth Woodman	*Durham.*	Mr. J. S. Chesley's.
Chesley, Ivy May	*Durham.*	Mr. J. S. Chesley's.
DeMerritte, Frank	*Exeter.*	DeMeritt Hall.
Dudley, William Clark	*Marlboro, Mass.*	DeMeritt Hall.
Durgin, Alfred Caverly	*Lee.*	Lee.
Fielden, Henry Brown	*Newport.*	DeMeritt Hall.
Foord, James Alfred	*Walpole.*	Nesmith Hall.
Foss, Edna Ethel	*Durham.*	Mr. M. K. Foss's.
Fullerton, John William	*Somersworth.*	Somersworth.
Haley, John Myron	*Dover.*	123 Portland St., Dover.
Hayes, Mabel Lucy	*Durham.*	Mr. Hayes's.
Howe, Horace Leonard	*Hollis.*	DeMeritt Hall.
Ladd, Samuel Tilton	*Epping.*	Mr. Chamberlin's.
Maloney, James Patrick	*Franklin Falls.*	Mr. Schoonmaker's.
Mathes, Harry Clinton	*Durham.*	Mrs. Thompson's.

Name.	Residence.	Room.
Meader, Alice Maude	*Newmarket.*	Newmarket.
Meader, Albert Eli	*Rochester.*	Hoitt House.
Moore, Herbert Fisher	*Penacook.*	DeMeritt Hall.
Morgan, Gerry Austin	*Milford.*	Mr. Chamberlin's.
Osborn, Ernest Sumner	*Rochester.*	Hoitt House.
Philbrick, John	*Seabrook.*	Mr. Chamberlin's.
Rice, Herbert Wood	*Henniker.*	
Richardson, Harry Putnam	*Milford.*	Mr. Chamberlin's.
Roberts, John Harry	*Rollinsford.*	
Sanborn, Fred Dexter,	*Ashland.*	DeMeritt Hall.
Shaw, Elijah Ray	*Nashua.*	
Shaw, Roscoe Hart	*Milton.*	DeMeritt Hall.
Simpson, Etta Lillian	*Durham.*	Mr. Simpson's.
Smart, Fannie Faustina	*Dover.*	Dover.
Smith, Cyrus Everett	*Hanover.*	
Smith, Fred Webster	*Franklin Falls.*	Mr. Schoonmaker's.
Snell, Edna Bernice	*Lee.*	Lee.
Straw, Edson Albert	*Pittsfield.*	Nesmith Hall.
Stevens, David Albert	*Durham.*	
Taft, DeForest Reed	*Winchester.*	DeMeritt Hall.
Thompson, George Winslow	*Epping.*	Mr. Hill's.
Tolles, Benjamin D.	*Somersworth.*	Somersworth.
Warner, Arthur Edward	*Riverside, R. I.*	DeMeritt Hall.
Watson, Frank Edwin	*Rock Bottom, Mass.*	Mr. Buzzell's.
Wiggin, Nellie Foss	*Lee.*	Lee.
Young, Rena Etta	*Newmarket.*	Mr. Hill's.

SPECIAL STUDENTS

Name.	Residence.	Subject.
Smith, Melvin Monroe	*Dover.*	Biology.
Smith, Jennie S.	*Newmarket.*	Biology.

SUMMER SCHOOL OF BIOLOGY

Name.	Residence.
Andrews, B. S.	*Manchester, New Hampshire.*
Coleman, Lydia Smith	*Newington, New Hampshire.*
Coleman, Dorothy	*Newington, New Hampshire.*
Folsom, Mabel A.	*West Epping, New Hampshire.*
Hacker, Emma L.	*Westbrook, Maine.*
Howe, Frederic W.	*Hollis, New Hampshire.*

Name.	Residence.
Kennedy, Nellie A.	*East Jefferson, Maine.*
Norton, William K.	*Milton, New Hampshire.*
Pease, Abbie A.	*South Newmarket, New Hampshire.*
Sanborn, Marion	*Kingston, New Hampshire.*
Sanborn, Grace	*Kingston, New Hampshire.*
Serex, Frederic	*Boston, Massachusetts.*
Thompson, Charlotte A.	*Durham, New Hampshire.*
Upton, Clara E.	*Nashua, New Hampshire.*
Young, Roxana P.	*Dover, New Hampshire.*

NON-RESIDENT COURSE IN AGRICULTURE

Abbott, S. E.	*East Aurora, New York.*
Adams, Charles L.	*East Providence, Rhode Island.*
Anderson, James A.	*Andover, Illinois.*
Ballinger, Ellis G.	*East View, Virginia.*
Bennett, Fred R.	*Bridgehampton, New York.*
Bates, H. E.	*Painesville, Ohio.*
Cable, D. J.	*Lima, Ohio.*
Calhoun, W. H., Jr.	*Jefferson, North Carolina.*
Chiashi, Lute Y.	*Carpenteria, California.*
Colby, Frank N.	*North Londonderry, New Hampshire.*
Coleman, Mrs. C. H.	*Newington, New Hampshire.*
Coleman, Lydia	*Newington, New Hampshire.*
Cowie, Allan	*Arcadia, Wisconsin.*
Crane, John J.	*New York, New York.*
Crosby, D. L.	*Peterborough, New Hampshire.*
Davis, B. F.	*South Lee, New Hampshire.*
Dodge, Edwin H.	*New Boston, New Hampshire.*
Dodge, William O.	*New Boston, New Hampshire.*
Dunham, G. Burton	*Boston, Massachusetts.*
Fernald, William L.	*Eliot, Maine.*
Gardner, James P., Jr.	*Brooklyn, New York.*
Guthrie, Samuel	*St. Louis, Missouri.*
Hammar, J. F.	*Swampscott, Massachusetts.*
Heimdal, Charles J.	*Prairie Farm, Wisconsin.*
Herrwig, Geo. W.	*Mason City, Illinois.*
Hill, D. H.	*South Lee, New Hampshire.*
Hoyt, Florence	*Newington, New Hampshire.*
Jamieson, William	*St. Louis, Missouri.*

Name.	Residence.
Killough, Harry	*Richmond, Kansas.*
Laskowski, Edward H.	*Brooklyn, New York.*
Lucas, A. G.	*Des Moines, Iowa.*
Lyon, C. D.	*Higginsport, Ohio.*
Morse, Elisha W.	*New Boston, New Hampshire.*
Pickering, Amanda	*Newington, New Hampshire.*
Pickering, Eldora A.	*Newington, New Hampshire.*
Ray, A. D.	*Brooklyn, Georgia.*
Reibsamen, F.	*Cabin Point, Virginia.*
Rengermann, William	*East Granby, Connecticut.*
Robb, George	*Tonganoxie, Kansas.*
Robbins, Luther	*Hollis Depot, New Hampshire.*
Roe, R. E.	*Storm Lake, Iowa.*
Sanford, George F.	*Winchester, New Hampshire.*
Sanford, S.	*Portsmouth, Rhode Island.*
Sawyer, Ansel B.	*Gilford, New Hampshire.*
Sleeper, Katherine	*Wonolancet, New Hampshire.*
Smith, George Wm.	*St. James, New York.*
Snodgrass, James	*St. Louis, Missouri.*
Staples, Faith E.	*Newington, New Hampshire.*
Staples, Mrs. F. M.	*Newington, New Hampshire.*
Stoneroad, V.	*Lewistown, Pennsylvania.*
Sumpter, O. H.	*Hot Springs, Arkansas.*
Teague, F. W.	*Victoria, British Columbia.*
Upham, Walter J.	*Weston, Massachusetts.*
Walden, A. T.	*Wonolancet, New Hampshire.*
Whaley, E. M.	*Courtenay, Florida.*
Whitehead, A. C.	*Eastman, Georgia.*
Williamson, Syvert S.	*Addison, Iowa.*

SUMMARY

Freshmen	50
Sophomores	34
Juniors	3
Seniors	4
Specials	2
Summer School Students	15
Non-Resident Students	57
	165
Twice Classified	1
	164

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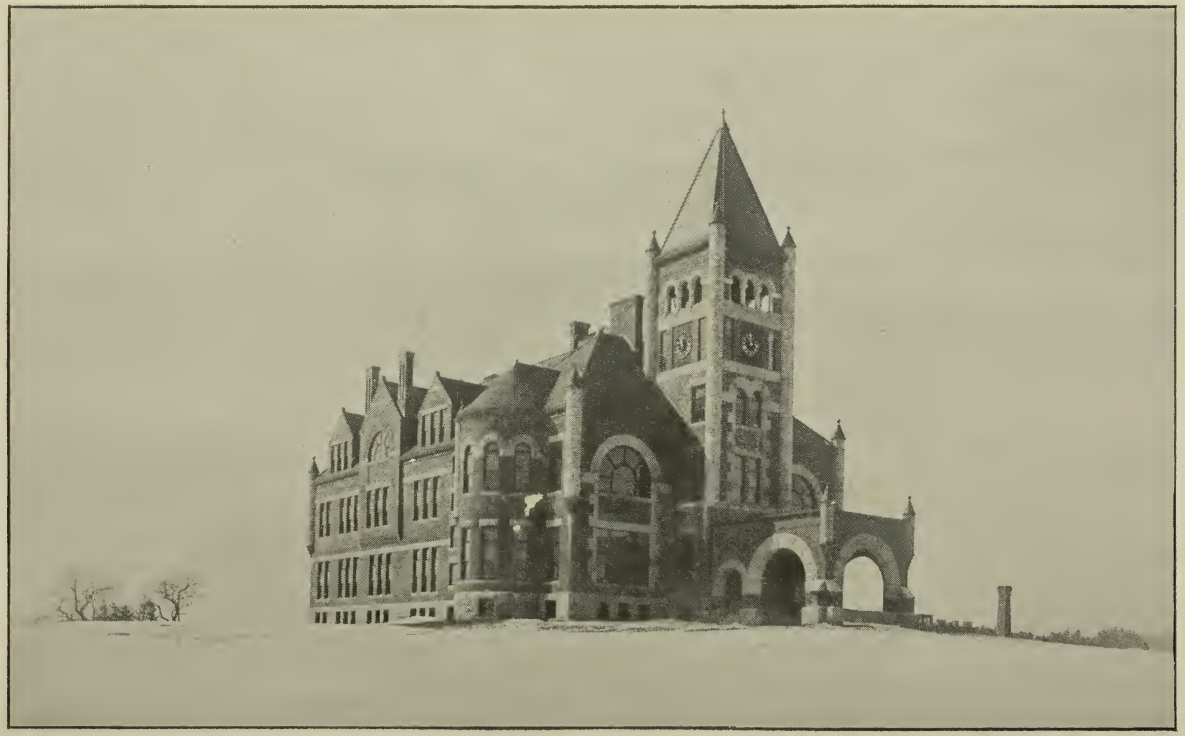

Thompson Hall.

ADMISSION

Candidates for the first year must present testimonials of good moral character, and must pass an examination in the following subjects:

a. Arithmetic, including the metric system.
b. Algebra, to quadratics.
c. Plane Geometry.
d. Political and Physical Geography.
e. Physiology.
f. American History.
g. English.

Those who pass also an examination in Myer's and Allen's Ancient History and Myer's Mediæval and Modern History, or its equivalent, may take French in place of the History of the first year.

In English the examination will consist in the criticism of specimens of incorrect English, together with a short essay, correct in spelling, punctuation, division into paragraphs, grammar and expression, on a subject to be announced at the time of the examination. In 1895 the subject will be taken from one of the following books; Shakespeare's Merchant of Venice and Twelfth Night; Milton's L'Allegro, Il Penseroso, Comus and Lycidas; Longfellow's Evangeline; the Sir Roger de Coverly Papers in the Spectator; Macaulay's Essay on Milton and Essay on Addison; Webster's first Bunker Hill Oration; Irving's Sketch-Book; Scott's Abbot.

In 1896, Shakespeare's Merchant of Venice and Midsummer Night's Dream; Milton's L'Allegro, Il Penseroso, Comus and Lycidas; Longfellow's Evangeline; Macaulay's Essay on Milton; Webster's first Bunker Hill Oration; De Foe's History of the Plague in London; Irving's Tales of a Traveler; Scott's Woodstock; George Eliot's Silas Marner.

In 1897, Shakespeare's Merchant of Venice and As You Like It; Scott's Marmion; Longfellow's Evangeline; Burke's Speech on Conciliation with America; Macaulay's Life of Samuel Johnson; De Foe's History of the Plague in London; Irving's Tales of a Traveler; Hawthorne's Twice-Told Tales; George Eliot's Silas Marner.

Students are advised to prepare themselves thoroughly in all the required subjects, and especially in English, in order that they may be able to express themselves clearly, concisely, and accurately.

They are further recommended not to limit their preparation to these requirements. The excellent academies and high schools of New Hampshire put within their reach a preliminary training which will add greatly to the value of a college course.

Candidates for advanced standing are examined in the studies that have been pursued by the class which they propose to enter, as well as in the studies required for admission.

A certificate from any academy or high school will be accepted in place of an examination, upon any subject required for admission to the first year. Every certificate must state the amount of work done by the student, his proficiency, and the text-books used; and in case it is not evident that the student is thoroughly prepared, an examination will be required. Certificate forms will be furnished on application.

The times for examination are Monday and Tuesday, June 3 and 4, and Tuesday and Wednesday September 3 and 4, 1895. Candidates must present themselves with their credentials on the first day of the examination, as indicated by the Calendar.

Upon the request of the principal of any high school or academy, entrance examination papers will be sent to him June 1. If the principal receiving such papers holds an examination on Tuesday, June 4, and within one week sends the answers to the questions to the president, the examination will have the same effect as if held at the college.

DESCRIPTION OF STUDIES

For the Courses of Study see pages 56 et seq.

AGRICULTURE

1. How Crops Grow. *Forty-five exercises.*

This course consists of lectures and recitations upon the composition of plants, the composition and sources of their food, and the processes by which they obtain and assimilate the elements necessary for their growth.

2. Animal Nutrition. *Thirty exercises.*

This course consists of lectures and recitations upon the physiology of the alimentary organs, the composition of foods, their assimilation, and the composition of the animal body.

3. Principles of Agriculture. *Twenty exercises.*

An exposition of the relations of the natural sciences to agriculture.

4 and 5. Practical Agriculture. *One hundred exercises.*

These two courses form a consecutive series of exercises, in which instruction is given by means of practical talks and exercises relative to fertilizers, soils, fruits, vegetables, bees, fowls, and other subjects.

6. Dairying and Dairy Chemistry. *Forty-five exercises.*

Course 6 consists of lectures and recitations upon the composition and manufacture of dairy products, and practical work in the dairy room.

7. Practical Stock Feeding. *Thirty exercises.*

Course 7 is a continuation of Course 3, and consists of lectures upon the compounding of food rations for stock, the action of various foods upon the animal system, and the most approved practice in feeding for the production of milk, butter, live weight, etc. The lectures are accompanied by practical illustrations.

8. Applied Agriculture. *Twenty exercises.*

Course 8 is a continuation of Course 4, and is a further discussion of the relations and applications of the sciences to Agriculture.

9. Agricultural Engineering. *Twenty exercises.*

Course 9 consists of instruction in planning and locating drains, roads, and buildings, upon the farm; and discussions on the different forms and uses of agricultural machinery.

10. Stock Breeding. *Twenty exercises.*

Recitations and lectures.

11. Experimental Agriculture. *Twenty exercises.*

Course 11 is the conclusion of Courses 4 and 9, and consists of lectures upon the methods of agricultural research, discussions of problems under investigation by scientists, and observations of experiments in progress upon the College Farm.

12. Discussions of the Bulletins of Experiment Stations. *Thirty-five exercises.*

Course 12 consists of weekly discussions and reviews of bulletins, with reference to their scientific and practical value.

13. Special Work in Agriculture. *Thirty exercises.*

The time given to Course 13 will be used by the student in pursuing original work upon some subject in which he has shown especial ability, and may be chosen by him, subject to the approval of the Professor of Agriculture.

BOTANY

1. Introductory Botany. *Fifty exercises.*

A general introduction to the study of plants by means of laboratory work and lectures.

2. Structural Botany. *Forty-five exercises.*

Lectures and laboratory work on the minute structure and physiology of plants, with special reference to the lower forms.

Open only to those who have taken Course 1.

3. Forestry.

Lectures concerning the utility of forests, principles of sylviculture; forestry laws, character and composition of woods, and the distribution of timber trees in the United States.

4. Plant Diseases. *Thirty exercises.*

A study by means of lectures and laboratory work of some of the more important fungous diseases of cultivated plants and the means of preventing their injuries.

Open only to students who have completed Botany 1 and 2.

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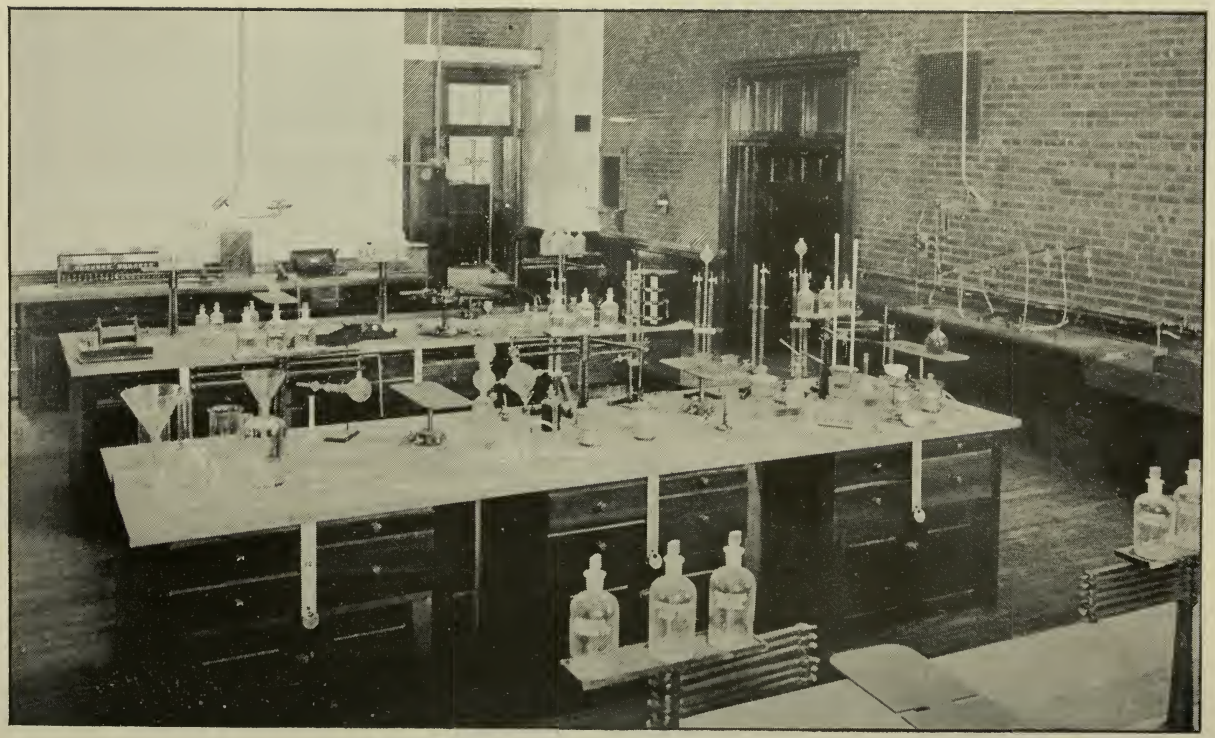

Quantitative Chemical Laboratory.

5. Advanced Botany.

Avreaging four exercises a week for a year.

Course 5 is intended for students electing botany for their Senior year, the instruction to be modified by needs of individual students.

Open only to those who have taken all preceding courses.

CHEMISTRY

1. Inorganic Chemistry. *Forty-five exercises.*

Lectures and recitations on general theoretical chemistry, illustrated by experiments, charts, specimens, lantern views, etc. Solutions of chemical problems will be required.

2. Inorganic Chemistry. *Thirty exercises.*

Course 2 is a continuation of Course 1, but the time will be spent mainly on the metallic elements, their metallurgy, salts, etc.

Open only to students who have passed in Course 1.

3. Organic Chemistry. *Thirty exercises.*

Course 3 will consist of lectures and recitations on the chemistry of the carbon compounds, together with the study of their properties by means of laboratory practice.

Open only to students who have passed in Course 1.

4. Organic Chemistry. *Twenty exercises.*

Course 4 is a continuation of Course 3 and must be preceded by it.

5. Qualitative Chemical Analysis.

Course 5 consists of laboratory practice with occasional lectures. The student is expected to become proficient in the separation and detection of the common acids and bases, and to keep a full set of notes. He will have practice in the writing of reactions and will fill out numerous slips containing questions bearing upon his work.

Open only to students who have completed Courses 1 and 2.

6. Qualitative Analysis completed and Quantitative Analysis begun. *Course extends through two terms.*

The work in quantitative analysis will be, in the main, elementary and pre paratory for advanced work.

Open to those who have completed Course 5.

7. Applied or Industrial Chemistry. *Forty exercises.*

Course 7 consists of lectures on chemical manufactures, such as iron, steel sugar, salt, sodium carbonate, fertilizers, sulphuric acid, glass, matches, paints

dyes, soaps, illuminating gas, petroleum, etc. The lectures will be illustrated by lantern views; and trips to the leading New England cities, to examine important chemical manufactures, will be taken as far as practicable.

Open only to those who have completed Courses 1, 2, 3, and 4.

8. Quantitative Analysis.

Course 8 consists of special work arranged for those in the Agricultural Course who are limited to the chemistry of the Junior Year. The course consists mainly in the analysis of fertilizers, fodders, grains, milk, and other dairy products, etc.

Open to those students who have completed Course 5.

9. Advanced Quantitative Analysis.

Course 9 extends through the year and is intended to fit the student for work in the laboratories of agricultural experiment stations, fertilizer works, iron works, sugar refineries, etc.; and for the duties of the public analyst. The course will be made to fit the end which each has in view, and will be largely an individual one. For those students in the Chemical Division of the Agricultural Course the analyses made will tend in the main toward agricultural products, fertilizers, mucks, marls, manures, dairy products, waters, food stuffs, sugars, etc. For the student wishing to enter metallurgical works the analyses will be in the main upon iron, steel, and other metals, ores, limestone, slags, alloys, fuels, etc. As a preparation to the study of medicine, work will be done on poisons, foods, drugs, urine, etc. Other lines will be arranged to meet the wants of the individual student. Every student will be given some practice in all of the branches of agricultural, metallurgical, medical, sanitary, and industrial chemistry, in order to lay a foundation for any future work which may be required of them. A short course in gas analysis will also be provided. A portion of the time of the last two terms is given to work bearing upon the preparation of a graduating thesis.

Open to students who have completed Course 6.

10. Organic Chemistry.

Course 10, for students in the Chemical Division of the Agricultural Course, and in the Technical Chemistry Course, consists of laboratory practice by the students in preparing and purifying products relating to their respective lines of work.

Open to those who have taken Courses 3 and 4.

11. Chemical Journals, Methods, etc. *Thirty-five exercises.*

The work consists in the study of current chemical literature, which is mainly in the German language, with recitations once a week throughout the year. Each student will be expected to prepare abstracts, reports, criticisms, etc., upon assigned articles.

Open to students taking Course 9.

12. Chemical Philosophy. Lectures and Recitations.
Forty exercises.

Work consists in advanced study of chemical theory. Practical experiments will be performed, with the aid of the student, in the determination of vapor density, molecular weights, specific heat, etc.; and the study of isomorphism, diffusion of gases, solutions, molecular and atomic volume, etc., will take up much of the time.

Course 12 comes in alternate years with Course 7 and is open to students who have completed Courses 1, 2, 3, and 4.

DRAWING

Two and one half hours work is reckoned as one exercise.

1. Freehand Drawing.

a. Thirty exercises. *b. Twenty exercises.*

The course includes outline drawing from models, and groups of common objects, light and shade drawing from models and from casts of historic ornament; the consideration of perspective principles; elementary design; machine sketching and the use of instruments.

2. Advanced Freehand Drawing.

a. Thirty exercises. *b. Twenty exercises.*

This course includes drawing from the cast and from still life with charcoal and stump; pencil sketching; the use of water color; design.

3. Descriptive Geometry and Drawing.

a. Fifty exercises. *b. Thirty exercises.*

Graphic solution of problems in solid geometry.

Course 2 is open only to those who have taken Mathematics 2.

4. Mechanical Drawing.

a. Elementary Projection Drawing. *Twenty exercises.*

b. Perspective Drawing and Line Shading. *Twenty exercises.*

c. Workshop Drawings. Tracing and the blue process of copying drawings. *Thirty exercises.*

ENGINEERING

1. Surveying. *Fifty exercises.*

Recitations, field work, and plotting, including compass, transit, plane-table, and level work.

2. Mechanism. *Seventy-five exercises.*

Recitations, and exercises in drawing outlines of elementary combinations.

Course 2 is open only to those who have taken Drawing 3.

3. Mechanics of Engineering. *One hundred exercises.*

a. Dynamics (Statics and Kinetics).

b. Mechanics of Materials.

Course 3 is open only to those who have taken Course 2 and Mathematics 6.

4. Materials of Construction. *Sixty exercises.*

Recitations on the production, properties, uses and preservation of engineering materials.

Course 4 is open only to those who have taken Course 3 b and Chemistry 2.

5. Thermodynamics. *Seventy-five exercises.*

Course 5 is open only to those who have taken Course 3 b and Physics 4 to 6.

6. Heat Motors and Refrigerating Machinery. *Thirty exercises.*

Recitations.

Course 6 is open only to those who have taken Course 5.

7. Construction and Theory of Dynamos and Electro-motors. *Seventy-five exercises.*

Lectures and quizzes.

Course 7 is open only to those who have taken Physics 4 to 6 and Mathematics 5 and 6.

8. Work in Mechanical Laboratory.

a. and *b*. Tests of Materials. *Sixty exercises.*

c. Tests of Boilers and Engines. *Twenty exercises.*

Courses 8 a and 8 b are open only to those who have taken Course 3 b. Course 8 c is open only to those who have taken Course 5.

9. Machine Design. *Forty exercises.*

Recitations.

Course 9 is open only to those who have taken Courses 3 and 4.

10. Dynamo Design. *Forty exercises.*

Work in the drawing room in the elementary designing of dynamos and electro-motors.

Course 10 is open to those who have taken Course 7.

11. Electrical Installations. *Thirty exercises.*

Lectures and quizzes on the methods and systems of electric lighting and electric distribution of power.

Course 11 is open only to those who have taken Course 7.

12. Sanitary Engineering. *Ten exercises.*

Lectures on heating, ventilation, drainage, and plumbing of public and private buildings.

13. Roads, Streets, and Pavements. *Twenty exercises.*

Recitations and lectures on construction and maintenance of paved, macadamized, and gravel roads, with discussion of laws relating thereto.

ENGLISH

1. Rhetoric. *Seventy exercises.*

Themes, with other exercises.

2. Three Themes. *One each term.*

3. Three Original Declamations. *One each term.*

4. Three Original Declamations. *One each term.*

5. English Literature, Chaucer to Addison. *Forty-five exercises.*

Study of authors.

6. English Literature, De Foe to Wordsworth. *Twenty exercises.*

Study of authors.

7. English Literature, Victorian Writers. *Thirty exercises.*

8. American Literature. *Forty exercises.*

Lectures and study of authors.

FRENCH

1. French Grammar and Tales. *Forty-five exercises.*

2. Easy Reading with Supplementary Syntax. *Thirty exercises.*

3. The Romantic School. *Thirty exercises.*

4. History of French Literature. *Forty-five exercises.*

5. Satire, Voltaire. *Thirty exercises.*

6. The Classic School. *Thirty exercises.*

Courses 4, 5, and 6 are open only to students who have completed the preceding courses.

GEOLOGY

1. Elementary Geology. *Thirty exercises.*

2. Mineralogy. *Thirty exercises.*

A short course in blowpipe analysis, followed by laboratory practice in the determination and study of minerals, with special reference to their economic value.

Course 2 is open only to students who have taken Chemistry 1 and 2.

3. Meteorology. *Twenty exercises.*

Recitations and lectures on wind systems, precipitation, humidity, laws of storms and tornadoes, and methods of prediction of atmospheric changes.

GERMAN

1. German Grammar and Tales. *Forty-five exercises.*

2. Easy Reading and Syntax. *Thirty exercises.*

3. Lyric Poetry. *Thirty exercises.*

4. Scientific German. *Forty-five exercises.*

5. Prose Literature. *Thirty exercises.*

6. German Drama. *Thirty exercises.*

Courses 4, 5, and 6 are open only to students who have completed the preceding courses.

HISTORY

1. Ancient History. *Forty-five exercises.*

2. Mediæval History. *Thirty exercises.*

3. Modern History. *Thirty exercises.*

4. American Political History. *Forty-five exercises.*

MATHEMATICS

1. Higher Algebra. *Sixty-five exercises.*

2. Solid Geometry, with advanced course. *Fifty-five exercises.*

3. Plane and Spherical Trigonometry. *Sixty exercises.*

4. Theory of Equations. *Thirty exercises.*

5. Analytic Geometry. *Seventy-five exercises.*

6. Differential and Integral Calculus. *One hundred exercises.*

PHILOSOPHY

1. Logic. *Thirty exercises.*

Lectures and recitations.

2. Ethics. *Twenty exercises.*

Lectures and recitations.

PHYSICS

1. Mechanics and Heat. *Forty-five exercises.*

2. Electricity and Magnetism. *Thirty exercises.*

3. Light and Sound. *Thirty exercises.*

Courses 1, 2, and 3 are a general introduction to the subject. The instruction is given by recitations and lectures, the latter being illustrated by experiments and stereopticon. Notes on lectures and experiments are submitted by each student.

4. Laboratory Work in Mechanics and Heat. *Forty-five exercises.*

5. Laboratory Work in Heat and Light. *Thirty exercises.*

6. Laboratory Work in Electricity and Magnetism. *Thirty exercises.*

The work consists in the experimental verification of the laws of physics and the determination of physical constants; for example, the student will by experiments investigate the intensity of gravity, co-efficients of friction, the analytical balance, elasticity of wires, specific heats, laws of radiation and absorption of heat, candle power of lights, dip, declination and intensity of the earth's magnetism, laws of electric currents, of electro-magnets, etc. A systematic and carefully written report on each experiment is required.

Courses 4, 5 and 6 are taken consecutively and are open only to those who have passed in Courses 1, 2 and 3. Students in Engineering must also have passed in Mathematics 1 to 6.

7. Electrical and Photometrical Measurements.

Thirty exercises.

The work consists in the measurement by various methods of current, resistances, and E. M. F., and in photometric study of arc and incandescent lamps.

Course 7 is open only to those who have passed in Courses 4, 5 and 6.

8. Experimental work on the efficiency, characteristic curves, and curves of potential of dynamos and motors.

Twenty exercises.

Course 8 is open only to those who have passed in Physics 7 and Engineering 7.

9. Advanced Work in Physical Laboratory.

One hundred and five exercises.

Course 9 is open only to those who have passed in Courses 1 to 6.

10. Astronomy. *Forty exercises.*

POLITICAL SCIENCE

1. Political Economy. *Lectures.* *Fifty exercises.*

2. Laws of Business. *Lectures.* *Thirty-three exercises.*

3. Constitutional Law. *Forty exercises.*

4. Advanced Political Economy. *Thirty exercises.*

Course 4 is open only to those who have taken Course 1.

SHOP WORK

Three hours work in the shops is reckoned as one exercise.

1. Work in Wood Shop.

Exercises in carpentry, joinery, and pattern making.

a. Forty-five exercises. *b. Thirty exercises.*
c. Thirty exercises. *d. Forty-five exercises.*
e. Thirty exercises. *f. Thirty exercises.*

2. Work in Machine Shop.

Exercises in bench work, machine work, and shop measurements.

a. Thirty exercises. *b. Twenty exercises.*
c. Twenty exercises. *d. Forty-five exercises.*
e. Thirty exercises. *f. Thirty exercises.*

ZOÖLOGY

1. Introductory Zoölogy. *Forty-five exercises.*

A general introduction to the study of animal life, by means of lectures and laboratory dissections of the principal types.

2. Animal Biology. *Forty exercises.*

A general study of the nature and process of animal life, with especial attention to heredity, variation, development, and mental powers.

Open to students who have taken Course 1.

3. Entomology. *Fifty exercises.*

A review of the classification, structural characters, and biological relations of insects, with a special study of those injurious to cultivated crops and domestic animals, and of the means of preventing their injuries.

Open only to those who have taken Courses 1 and 2.

4 *a*. Systematic Ornithology. *Twenty exercises.*

Lectures on the classification of birds, with laboratory determinations of species.

4 *b*. Economic Ornithology. *Twenty exercises.*

Lectures on the relations of birds to agriculture, and their relations to each other and to other organisms.

Courses 4 a and 4 b are open only to students who have taken Courses 1, 2, and 3.

5. Advanced Zoölogy.
Averaging four exercises a week for a year.

Course 6 is intended for those students who elect Zoölogy for their Senior Year. It will usually be modified to suit individual needs. Open only to those who have completed all preceding courses.

6. Zoölogical Bibliography. *One hour a week for a year.*

Open only to students taking Course 5.

7. Biological Literature. *Thirty exercises.*

COURSES OF STUDY

For details see Description of Studies.

REGULAR COURSE*

Freshman Year.

FIRST TERM.

	Hours per week.
Rhetoric and Themes—English 1	2
Algebra and Geometry—Mathematics 1 and 2	6
Shop Work‡—Shop Work 1 *a*	3
Freehand Drawing—Drawing 1 *a*	2
Ancient History—History 1; or French†—French 1	3

SECOND TERM.

Rhetoric and Themes—English 1	2
Geometry and Trigonometry—Mathematics 2 and 3	6
Shop Work‡—Shop Work—1 *b*	3
Freehand Drawing—Drawing 1 *b*	2
Mediæval History—History 2; or French†—French 2	3

THIRD TERM.

Rhetoric and Themes—English 1	2
Trigonometry—Mathematics 3	3
Descriptive Geometry—Drawing 3 *a*; or Botany—Botany 1	5
Modern History—History 3; or French†—French 3	3
Theory of Equations—Mathematics 4; or Shop Work 1 *c*‡	3

* For the first two years students are not designated as being in any of the special courses, but all take the studies laid down in the regular course.

† French can be elected by those who have taken History 1, 2, and 3.

‡ French is taken by women in place of Shop Work.

Sophomore Year.

FIRST TERM.

	Hours per week.
Analytic Geometry—Mathematics 5; or Drawing 2 *a* and English Literature—English 5	5 or 4
French,‡ 1 or 4; or German 1; or Shop Work 1 *d*	3
Physics—Physics 1	3
Shop Work 1 *d*; or Botany 2	3
Descriptive Geometry—Drawing 3 *b*; or Inorganic Chemistry—Chemistry 1	2 or 3
One Theme.	

SECOND TERM.

Calculus—Mathematics 6; or Inorganic and Organic Chemistry—Chemistry 2 and 3	5 or 6
French 2 or 5; or German 2; or Shop Work 1 *e*	3
Physics—Physics 2	3
Drawing 3 *b*; or English Literature—English 6	2
Shop Work 1 *e*; or Drawing 1 *d*	3 or 2
One Theme.	

THIRD TERM.

Calculus—Mathematics 6; or Organic Chemistry—Chemistry 4; and Mineralogy—Geology 2	5
Surveying—Engineering 1	5
Physics—Physics 3	3
French 3 or 6; or German 3	3
One Theme.	

Women may substitute for surveying one of the elective studies from the third term of the Junior Year.

‡ French is required of those students who intend to take the work of the Chemical and Biological Divisions.

COURSE IN AGRICULTURE

This course is designed to give young men a thorough knowledge of practical Agriculture and the sciences having a direct bearing upon it, without neglecting the broad principles of a general education.

The strictly agricultural work is planned to give valuable knowledge for future use on the farm or in the dairy.

The Chemical and Biological Divisions are designed to give professional training in these two sciences which have such a close connection with modern Agriculture.

Junior Year.

FIRST TERM.

	Hours per week
Zoölogy—Zoölogy 1	3
How Crops Grow—Agriculture 1	3
Chemistry—Chemistry 5	5
Plant Diseases—Botany 4	2
German—German 1; or Physical Laboratory—Physics 4	3
One Original Declamation—English 3.	

SECOND TERM.

Animal Nutrition—Agriculture 2	3
Geology and Meteorology—Geology 1 and 3	5
Agricultural Chemistry—Chemistry 8	3
Principles of Agriculture—Agriculture 3	2
German—German 2; Animal Biology—Zoölogy 2	3
One Original Declamation—English 3.	

THIRD TERM.

Entomology—Zoölogy 3	5
Ethics—Philosophy 2	2
Practical Agriculture—Agriculture 4	4
Roads—Engineering 13	2
German—German 3; or Chemistry—Chemistry 6	3
One Original Declamation—English 3.	

Senior Year.

FIRST TERM.

	Hours per week.
Laws of Business and Constitutional Law—Political Science 2 and 3	5
Dairying and Dairy Chemistry—Agriculture 6	3
Practical Agriculture—Agriculture 5	4
Discussion of Experiment Station Bulletins—Agriculture 12	1
German—German 4; or Political History—History 4	3
One Original Declamation—English 4.	

SECOND TERM.

Astronomy and Sanitary Science—Physics 10, Engineering 12	5
Stock Feeding—Agriculture 7	3
Applied Agriculture—Agriculture 8	2
Economic Ornithology—Zoölogy 4 *b*	2
Discussion of Experiment Station Bulletins—Agriculture 12	1
German—German 5; or Special Work—Agriculture 13	3
One Original Declamation—English 4.	

THIRD TERM.

Political Economy—Political Science 1	5
Agricultural Engineering—Agriculture 9	2
Stock Breeding and Experimental Agriculture—Agriculture 10 and 11	4
Discussion of Experiment Station Bulletins—Agriculture 12	1
German—German 6; or Logic—Philosophy 1	3
One Original Declamation—English 4.	

CHEMICAL DIVISION OF THE AGRICULTURAL COURSE

The work in this division is intended especially to fit for the profession of an agricultural chemist—for work in experiment stations, large dairy establishments, fertilizer works, etc. This field offers, perhaps, more inducements for investigation in chemical science than any other. The chemistry of plant or animal growth and nutrition is comparatively undeveloped, and offers a wide and profitable field for research.

Junior Year.

FIRST TERM.

	Hours per week.
How Crops Grow—Agriculture 1	3
German—German 1	3
Plant Diseases—Botany 4	2
Zoölogy—Zoölogy 1	3
Chemistry—Chemistry 5	5
One Original Declamation—English 3.	

SECOND TERM.

Animal Nutrition—Agriculture 2	3
German—German 2	3
Geology—Geology 1	3
Chemistry—Chemistry 6	5
Applied Chemistry—Chemistry 7	2
One Original Declamation—English 3.	

THIRD TERM.

Entomology—Zoölogy 3	5
German—German 3	3
Chemistry—Chemistry 6	5
Applied Chemistry—Chemistry 7	2
One Original Declamation—English 3.	

Senior Year.

FIRST TERM.

Constitutional Law and Laws of Business—Political Science 2 and 3	5
German—German 4	3
Chemistry—Chemistry 9	5
Organic Chemistry—Chemistry 10	2
Chemical Journals, Methods, etc.—Chemistry 11	1
One Original Declamation—English 4.	

SECOND TERM.

Astronomy—Physics 10	4
Sanitary Engineering—Engineering 12	1

	Hours per week.
German—German 5	3
Chemistry—Chemistry 9	5
Chemical Philosophy—Chemistry 12	2
Chemical Journals, Methods, etc.—Chemistry 11	1
One Original Declamation—English 4.	

THIRD TERM.

Political Economy—Political Science 1	5
German—German 6	3
Chemistry—Chemistry 9	5
Chemical Philosophy—Chemistry 12	2
Chemical Journals, Methods, etc.—Chemistry 11	1
One Original Declamation—English 4.	

BIOLOGICAL DIVISION OF THE AGRICULTURAL COURSE

Students desiring to make a special study of the biological sciences relating to Agriculture—such as botany, entomology, economic zoölogy, etc.—may elect the following schedule for their last two years:

Junior Year.

FIRST TERM.

	Hours per week.
Zoölogy—Zoölogy 1	3
How Crops Grow—Agriculture 1	3
German—German 1	3
Chemistry—Chemistry 5	5
Plant Diseases—Botany 4	2
One Original Declamation—English 3.	

SECOND TERM.

Animal Nutrition—Agriculture 2	3
Geology—Geology 1	3
German—German 2	3
Chemistry—Chemistry 6	3
Animal Biology—Zoölogy 2	4
One Original Declamation—English 3.	

THIRD TERM.

	Hours per week.
Entomology—Zoölogy 3	5
German—German 3	3
Logic—Philosophy 1	3
Agriculture—Agriculture 5	3
Ethics—Philosophy 2	2
One Original Declamation—English 3.	

SENIOR YEAR.

FIRST TERM.

Laws of Business and Constitutional Law—Political Science 2 and 3	5
German—German 4	3
Botany—Botany 5; or Zoölogy—Zoölogy 5 and 6	6
Biological Literature—Zoölogy 7	2
One Original Declamation—English 4.	

SECOND TERM.

Astronomy—Physics 10	4
Sanitary Science—Engineering 12	1
German—German 5	3
Ornithology—Zoölogy 4	4
Botany—Botany 5; or Zoölogy—Zoölogy 5 and 6	4
One Original Declamation—English 4.	

THIRD TERM.

Political Economy—Political Science 1	5
German—German 6	3
American Literature—English 8	3
Botany—Botany 5; or Zoölogy—Zoölogy 5 and 6	5
One Original Declamation—English 4.	

COURSE IN TECHNICAL CHEMISTRY

This course is designed to meet the needs of the general professional chemist. Those desiring to give their chief time to agricultural chemical research and analysis are advised to take the Agricultural course, giving their last two years to the Chemical Division of that course.

Junior Year.

FIRST TERM.

	Hours per week.
Chemistry—Chemistry 5	5
German—German 1	3
Physical Laboratory—Physics 4	3
How Crops Grow—Agriculture 1	3
Plant Diseases—Botany 4	2
One Original Declamation—English 3.	

SECOND TERM.

Chemistry—Chemistry 6	5
German—German 2	3
Physical Laboratory—Physics 5	3
Geology—Geology 1	3
Applied Chemistry—Chemistry 7	2
One Original Declamation—English 3.	

THIRD TERM.

Chemistry—Chemistry 6	5
German—German 3	3
Physical Laboratory—Physics 6	3
Applied Chemistry—Chemistry 7	2
Machine Shop—Shop Work 2 *a*	2
One Original Declamation—English 3.	

Senior Year.

FIRST TERM.

Chemistry—Chemistry 9	5
Organic Chemistry—Chemistry 10	2
German—German 4	3
Constitutional Law and Laws of Business—Political Science 2 and 3	5
Chemical Journals, Methods, etc.—Chemistry 11	1
One Original Declamation—English 4.	

SECOND TERM.

	Hours per week.
Chemistry—Chemistry 9	5
German—German 5	3
Astronomy—Physics 10	4
Sanitary Engineering—Engineering 12	1
Chemical Philosophy—Chemistry 12	2
Chemical Journals, Methods, etc.—Chemistry 11	1
One Original Declamation—English 4.	

THIRD TERM.

Chemistry—Chemistry 9	5
German—German 6	3
Political Economy—Political Science 1	5
Chemical Philosophy—Chemistry 12	2
Chemical Journals, Methods, etc.—Chemistry 11	1
One Original Declamation—English 4.	

COURSE IN MECHANICAL ENGINEERING

Junior Year.

FIRST TERM.

Mechanism—Engineering 2	5
French*—French 4; or German—German 4	3
Chemistry—Chemistry 1	3
Physical Laboratory—Physics 4	3
Shop Work—Shop Work 2 *a*	2
One Original Declamation—English 3.	

SECOND TERM.

Mechanics of Engineering—Engineering 3 *a*	5
French*—French 5; or German—German 5	3
Chemistry—Chemistry 2	3
Physical Laboratory—Physics 5	3
Shop Work—Shop Work 2*b*	2
One Original Declamation—English 3.	

*Engineering students who take French in Freshman year take German in the two following years. Engineering students who take History in Freshman year may elect between two years of French and two years of German.

THIRD TERM.

	Hours per week.
Mechanics of Engineering—Engineering 3 *b*	5
French—French 6; or German—German 6	3
Mineralogy—Geology 2	3
Physical Laboratory—Physics 6	3
Shop Work—Shop Work 2 *c*	2
One Original Declamation—English 3.	

Senior Year.

FIRST TERM.

Materials of Construction—Engineering 4	4
Thermodynamics—Engineering 5	3
Chemistry—Chemistry 5	2
Drawing—Drawing 3 *c*	2
Shop Work—Shop Work 2 *d*	3
Mechanical Laboratory—Engineering 8 *a*	2
One Original Declamation—English 4.	

SECOND TERM.

Thermodynamics—Engineering 5	3
Chemistry—Chemistry 6	2
Mechanical Laboratory—Engineering 8 *b*	3
Machine Design—Engineering 9	4
Shop Work—Shop Work 2 *e*	3
Work on Thesis	1
One Original Declamation—English 4.	

THIRD TERM.

Political Economy—Political Science 1	5
Heat Motors and Refrigerating Machines—Engineering 6	3
Mechanical Laboratory—Engineering 8 *c*	2
Shop Work—Shop Work 2 *f*	3
Work on Thesis	3
One Original Declamation—English 4.	

COURSE IN ELECTRICAL ENGINEERING

For three years the course is the same as the course in Mechanical Engineering. The work of the fourth year is almost entirely technical. Recitations and lectures are supplemented by work in the laboratories and by the inspection and study of machinery in operation.

For the latter purpose the electric lighting and electric street railway systems in operation within ten miles of the college furnish excellent opportunities. Even more valuable will be a central station, on the alternating system, operated by the college itself, which the student will be enabled to study and test.

Junior Year.

Same as the Mechanical Engineering Course.

Senior Year.

FIRST TERM.

	Hours per week.
Materials of Construction—Engineering 4	4
Thermodynamics—Engineering 5	3
Chemistry—Chemistry 5	2
Drawing—Drawing 3 *c*	2
Dynamo-Electric Machinery—Engineering 7	5
One Original Declamation—English 4.	

SECOND TERM.

Thermodynamics—Engineering 5	3
Chemistry—Chemistry 6	2
Mechanical Laboratory—Engineering 8 *b*	3
Dynamo Design—Engineering 10	4
Electrical Laboratory—Physics 7	3
Work on Thesis	1
One Original Declamation—English 4.	

THIRD TERM.

Political Economy—Political Science 1	5
Heat Motors—Engineering 6	3
Electrical Laboratory—Physics 8	2
Electrical Installations—Engineering 11	3
Work on Thesis	3
One Original Declamation—English 4.	

GENERAL COURSE

Junior Year.

FIRST TERM.

	Hours per week.
German—German 1	3
Laboratory work in Chemistry 5	5
One Original Declamation—English 3.	

Elective, eight hours per week, from the following:

How Crops Grow—Agriculture 1	3
Plant Diseases—Botany 4	2
Laboratory Work in Physics—Physics 4	3
Analytic Geometry—Mathematics 5	5
Zoölogy—Zoölogy 1	3

SECOND TERM.

German—German 2	3
English Literature—English 7	3
One Original Declamation—English 3.	

Elective, ten hours per week, from the following:

Animal Nutrition—Agriculture 3	3
Geology—Geology 1	3
Laboratory Work in Chemistry—Chemistry 6	3 to 5
Laboratory Work in Physics—Physics 5	3
Animal Biology—Zoölogy 2	3
Calculus—Mathematics 6	5

THIRD TERM.

German—German 3	3
Political Economy—Political Science 1	5
One Original Declamation—English 3.	

Elective, eight hours per week, from the following:

Entomology—Zoölogy 3	5
Logic—Philosophy 1	3
Laboratory Work in Chemistry—Chemistry 6	3 or 5
Laboratory Work in Physics—Physics 6	3
Calculus—Mathematics 6	5

Senior Year.

FIRST TERM.

	Hours per week.
Constitutional Law and Laws of Business—Political Science 2 and 3	5
German—German 4	3
One Original Declamation—English 4.	

Elective, eight hours per week, from the following:

American Political History—History 4	3
Advanced Work in Physical Laboratory—Physics 9	3
Laboratory Work in Chemistry—Chemistry 9	3 to 5
Advanced Botany—Botany 5	4
Advanced Zoölogy—Zoölogy 5 and 6	4 or 5

SECOND TERM.

Astronomy and Sanitary Science—Physics 10 and Engineering 12	5
German—German 5	3
One Original Declamation—English 4.	

Elective, eight hours per week, from the following:

Advanced Political Economy—Political Science 4	3
Advanced Work in Physical Laboratory—Physics 9	3
Laboratory Work in Chemistry—Chemistry 9	3 or 5
Advanced Botany—Botany 5	4
Advanced Zoölogy—Zoölogy 6 and 7	4 or 5
Meteorology—Geology 3	2
Ornithology—Zoölogy 4 *a*	2

THIRD TERM.

American Literature—English 8	4
German—German 6	3
Work on Thesis.	
One Original Declamation—English 4.	

Elective, four to six exercises per week, from the following:

Advanced Work in Physical Laboratory—Physics 9	3
Laboratory Work in Chemistry—Chemistry 9	3 or 5
Advanced Botany—Botany 5	4
Advanced Zoölogy—Zoölogy 5 and 6	4 or 5
Roads—Engineering 13	2
Ethics—Philosophy 2	2

SUMMER SCHOOL OF BIOLOGY

The impetus recently given to nature-study in the secondary and lower schools has led to a demand for the more thorough preparation of teachers in the essentials of botany and zoölogy. Teachers cannot get special training in these branches during the college year, because it coincides with their teaching year. In the past their opportunities for getting it during the summer have been limited, on account of the lack of summer schools.

To meet this demand the New Hampshire College, coöperating with Superintendent Gowing of the State Department of Public Instruction, has instituted a Summer School of Biology, especially adapted to the needs of teachers. It is held in the laboratories and class rooms of Thompson Hall, students being granted free use of the library, microscopes, aquaria, collections and other facilities. The laboratory instruction is supplemented by work in the field and class room, and by informal discussions of such topics as are likely to prove useful for illustrative purposes in nature-study in the lower schools.

The course of study covers the line of work in botany and zoölogy recommended in the recent report of the Committee on Secondary School Studies, appointed by the National Educational Association for adoption by the secondary schools. A certificate is given to those who satisfactorily complete the course.

The situation of the college is peculiarly favorable to the study of natural history. Plants and animals inhabiting a great variety of land surface, as well as fresh, brackish, and salt water, are easily accessible.

A programme of the school for 1895 will be issued during the winter, and may be obtained on application to the President.

Applicants may address

President Charles S. Murkland,
Durham, N. H.

INSTITUTE COURSE IN AGRICULTURE

This course is intended for those who desire a better understanding of the science and practice of Agriculture, but who are unable to pursue the regular course.

The course is expected to prepare men for an intelligent home study of practical agricultural problems. Instruction will be given by means of lectures and laboratory work, the faculty being assisted by specialists. Students will be required to take notes, and join in the discussion which

will frequently follow the lectures. Those interested in particular subjects will be given all available facilities to inform themselves by means of practical work.

The average expense of attendance upon this course will be about $20. This estimate includes railroad fares, room, and board.

An important feature of the course for 1895 will be a practical dairy school, in which the students will become familiar with modern dairy methods through practice in the creamery.

A complete programme of the course will be issued in December. For further information apply to President C. S. Murkland.

NON-RESIDENT COURSE IN AGRICULTURE

This course is primarily designed to meet the needs of those farmers' sons who are unable to leave home to attend college, but who feel the want of the fuller knowledge of their work which the college offers.

The instruction in this course is given mainly by correspondence. Where several of the students live near together members of the faculty give lectures in person at occasional intervals, thus bringing the course into line with both the Chatauqua and University Extension movements.

The best standard books, selected Experiment Station bulletins, and pamphlets written by practical specialists are used. In this way it is hoped to make it a progressive course along practical lines.

The methods of the course are briefly as follows:

1. It is free to all, with no entrance examination or fee. The student can begin at any time; and the privileges of the course are not limited to residents of New Hampshire.

2. Students may work for a certificate or not, as they see fit, but they are strongly urged to do the former. Those who work for certificate will, as studies are finished, send in answers to sets of examination questions: others will submit a statement that they have carefully read the specified works.

3. Each book and each pamphlet is estimated at a certain number of exercises, an exercise averaging ten pages of reading matter.

4. The satisfactory completion of six hundred exercises entitles the student to a certificate. Under ordinary conditions this requires an hour's reading each day, five days a week, for two years.

5. Each student working for a certificate will be required to take certain general studies, such as Soils, Tillage, Noxious Insects, Fungous

Diseases, Meteorology, Laws of Plant Growth, Farm and Household Chemistry, Fertilizers, etc., and to select at least three lines of study from the following or similar subjects:

Dairying.	Orchard Fruits.
Stock-feeding.	Small Fruits.
Stock-breeding.	Vegetables.
Poultry-keeping.	Floriculture.
Field Crops.	Plant Propagation.
Forestry.	Road Construction.

Students not working for a certificate may select any of the above subjects they desire, but it is recommended that they pursue the prescribed lines of general reading in connection with special subjects.

6. The cost of books is not great. As far as possible the college furnishes bulletins free, and books at lowest cost.

It is expected that where several students live near together, the members of the faculty will be able to deliver lectures in person at occasional intervals, thus bringing the course into line with the University Extension movement.

The coöperation of granges, farmers' clubs, village improvement societies, and other organizations is earnestly desired.

Apply, stating what subjects you wish to study, to

President C. S. Murkland,
Durham, N. H.

GENERAL INFORMATION

ATTENDANCE

All regular students are required to attend chapel and rhetoricals, and to register for at least sixteen exercises per week.

PRIZES

I. The Smyth Prizes.—Hon. Frederick Smyth, of Manchester, N. H., offers to members of the Senior and Junior classes two prizes, one of twenty dollars and the other of ten, for the best essays on subjects connected with agriculture or the mechanic arts; also three prizes, one of twenty, one of fifteen, and one of ten dollars, for excellence in oratory, open to the upper classes; also two prizes for reading, one of fifteen and one of ten dollars, open to the lower classes.

II. Bailey Prize.—Dr. C. H. Bailey, of Gardner, Mass., and E. A. Bailey, B. S., of Winchendon, Mass., offer a prize of ten dollars for proficiency in chemistry.

III. Erskine Mason Memorial Prize.—Mrs. Erskine Mason, of Stamford, Conn., has invested one hundred dollars as a memorial of her son, a member of the class of '93, the income from which is to be given, for the present, to that member of the Senior class who has made the greatest improvement during his course.

DEGREES

The degree of Bachelor of Science will be conferred upon those who complete a four years course, or its equivalent, and pass the final examinations. Each candidate for a degree must prepare a thesis on some subject relating to the course of study taken.

The college offers opportunities for post-graduate study in agricultural, scientific, and engineering lines. After the satisfactory completion of an appropriate amount of work, advanced degrees will be given.

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Conant Hall.

BUILDINGS

THOMPSON HALL

Thompson Hall, the main college building, has a length of 128 feet, exclusive of the porte cochère, which is forty feet long, and a width of 93 feet in the widest part. It is built of granite and brick, and has three stories besides the basement.

One half of the first floor and basement is devoted to the library, which is provided with a large, well lighted reading room for papers and magazines, a reference room for special work, a librarian's room, a delivery room, and shelf space for fifty thousand volumes.

The remainder of the first floor is used for offices, recitations rooms, and a waiting room for women.

On the second floor are more offices and recitation rooms, and the botanical and zoölogical laboratories and the museum.

On the third floor is the large hall used as an auditorium, two literary society rooms, and the bell-boy's room.

The building is lighted by gas and electricity, and provided with the most approved system of heating and ventilation.

CONANT HALL.

[Chemical and Physical Laboratories.]

Conant Hall contains the laboratories and lecture rooms for instruction in chemistry, physics, and electrical engineering. It is a substantial brick building, 92 by 70 feet, and three stories high, including the basement. It is heated by steam brought from the shops, lighted by gas and electricity, and provided with a system of thorough ventilation. Water, gas, high pressure steam, hydrogen, oxygen, vacuum, and blast are supplied through pipes wherever needed, and the lecture rooms, in addition, have switches controlling both dynamo and battery currents, and arrangements for stereopticon illustration.

The basement contains a small work shop, the battery, photometer, photographic, and comparator rooms, a clock room protected by double walls against changes of temperature, an acid room, and a water and gas laboratory, provided with the necessary fixtures and appliances.

The first floor, with the exception of one room, is occupied by the physics department. It contains the mineralogical laboratory, which is

provided with tile-covered desks and other facilities for blowpipe analysis; the junior physical laboratory; an apparatus room; a reading and reference room for physical and electrical books and periodicals; an electrical laboratory, from the neighborhood of which masses of iron have been excluded, so that magnetic measurements can be made with a good degree of accuracy; and the physical lecture room, which is provided with all necessary conveniences, as before mentioned. For optical experiments the room can be darkened by means of special window-shutters, operated from one of the lecture desks. A stone pier between the two desks makes it possible to use delicate instruments.

The second floor is given up entirely to the chemical department. It contains storerooms, an organic laboratory, a qualitative laboratory, a private laboratory, a dark room for polariscopic and spectroscopic work, a lecture room provided with facilities as before described, a quantitative laboratory, and a room to contain the delicate chemical balances and most important reference works.

The laboratories are fitted up with the most modern accessories, and with special reference to the kind of work to be performed in each.

THE SHOP BUILDINGS.

The shops have been planned and built with the object of providing facilities for instruction in the working of wood and metals, and in the design, construction, care, and management of machinery. Incorporated with the shops is a central station for furnishing heat, light, water, and power, wherever needed in any of the college buildings; and the machinery of this station forms a part of the material equipment of the engineering departments.

The main shop building is 42 by 106 feet, and two stories high, with a basement 31 by 42 feet. In a separate one-story building, 40 by 100 feet, on a level with the basement of the main building, are the boiler house, forge shop, coal shed, and foundry.

In the boiler room, three boilers, aggregating one hundred and sixty horse-power, furnish steam to all the college buildings, wherever needed for heating or power. A brick chimney 95 feet high has been built to carry away the waste gases from the furnaces. The coal room provides for the storage of two hundred tons of coal conveniently near the boilers.

The basement of the main shop building is used as an engine room. containing a forty horse-power engine, furnishing power for the shops

Work Shops

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and for the electric lighting; a dynamo for lighting the college buildings and campus; and the large steam pump, which receives water by gravity from the reservoir one half mile distant and forces it through underground mains to the various hydrants and buildings. The engine room serves as a power laboratory, and the machines mentioned, with others, will give to students opportunity for making efficiency tests.

On the first floor of the main shop building, a lavatory is provided. The largest room on this floor is the machine shop, where there is opportunity for practice in the operations of working metals by cutting ools, both by hand work and by machinery.

The second floor of this building is mainly occupied by a wood shop, in which the common branches of carpentry, joinery, and pattern making are taught. Practice is given in the use of carpenter's tools, and in the care and operation of the machines of most general use in woodworking. A well lighted corner of this room is partioned off, and will be equipped for copying drawings by the blue process. Two office rooms are also provided, one of which will temporarily be used as a recitation room, the other as a drawing room.

The shop buildings are constructed on the "slow-burning" principle, with thick walls and heavy continuous plank floors. The rooms are all well lighted and well ventilated.

APPARATUS, LIBRARY, AND FARM.

The various chemical laboratories are supplied with a full line of such apparatus as is required in each. Besides all necessary glass and porcelain ware, this includes water baths; drying ovens, combustion, muffle, and assay furnaces; platinum dishes and crucibles; polariscope; spectroscope; balances; lantern and other lecture appliances, etc.

The physical laboratory is equipped with a good collection of the usual apparatus for laboratory work and lecture room illustration, to which will be continually added pieces purchased or made in the college shop.

In electricity and magnetism the equipment includes instruments of high precision, and of the latest forms, for the measurement of current electro-motive force and resistance, as well as others of less accuracy for elementary work.

For more strictly electrical engineering work the department has the five-hundred light alternator used in lighting the college buildings, a direct-current "exciter" dynamo, all the apparatus of a complete fifty-five light Edison isolated electric lighting plant, a Sorley storage bat-

tery of twenty-six cells, arc and incandescent lamps, and standard forms of voltmeter, ammeter, and transformer.

The zoölogical laboratory is well supplied with aquaria, microscopes, dissecting tools, charts, reference-books, collections, etc.

The botanical laboratory is supplied with a good herbarium, microscopes, and the other necessary appliances.

The surveying instruments are sufficient in number and of the most approved pattern.

MUSEUM.

The museum had for a nucleus the collections made during the state geological survey. To this additions have been made from various sources. Many specimens are being collected to illustrate zoölogy—especially entomology. It occupies a large, well lighted room in the main building.

LIBRARY.

The library of the college consists of about thirty-five hundred bound volumes besides pamphlets. A considerable part of these are new and expensive books, making good working libraries for the different departments of instruction, including economic science and English and American literature.

Students also have the free use of the Durham public library of about thirty-five hundred well selected volumes.

The college supports a reading-room, which is well supplied with the leading American and foreign periodicals.

FARM.

The farm contains more than three hundred acres of valuable land. It has been provided partly from the funds given by Hon. John Conant and partly from the Benjamin Thompson estate.

It is used for the purpose of an experiment station, for which it is considered by leading agriculturists as being especially fitted.

A model barn has been erected, at an expense of about ten thousand dollars.

SITUATION AND RAILROAD CONNECTIONS

Durham is situated on the western division of the Boston & Maine railroad, sixty-two miles from Boston, and about midway between Newmarket Junction and the city of Dover, being five miles from the latter place.

From nearly every part of the state it is easily reached over the Boston & Maine and Concord & Montreal railroads. Each of these roads sells a transferable, unlimited mileage ticket at the rate of two cents per mile.

PECUNIARY AID AND EXPENSES

Tuition is $60 per year, although numerous scholarships give free tuition to many New Hampshire students. The trustees have arranged the scholarships as follows: There are thirty Conant scholarships, each paying $40 and tuition, $60,—total, $100. These are to be assigned under the following conditions: 1. They are to be given to young men taking an agricultural course; 2. Each town in Cheshire county is entitled to one scholarship, and Jaffrey is entitled to two; 3. Scholarships not taken by students from Cheshire country, and those in excess of the number of towns, are to be assigned to agricultural students at the discretion of the Faculty.

There are twenty-four senatorial scholarships—one for each senatorial district. Each scholarship is to pay tuition, $60. Senatorial scholarships not filled can be assigned to students from other localities at the discretion of the Faculty; they are open to students in all courses.

Early application should be made for these scholarships. They will be reserved for those respective towns and districts until August 1 of each year, after which they may be otherwise assigned for the year.

These scholarships are given for the purpose of aiding deserving students, and will be withdrawn from those who use tobacco or intoxicating liquors, or show themselves not deserving. Janitorships, work on the farm, etc., also furnish assistance to a considerable extent.

Expenses may be estimated as follows:

Tuition	Free	$60.00
Text-books	$10.00	20.00
Library and reading-room tax	6.00	6.00
Room rent, including fuel	18.00 to	40.00
Board $3 per week, for 35 weeks	105.00 to	122.50
Total	$139.00	$298.50

Room rent is estimated on the supposition that two students occupy the same room.

Rooms may be obtained either furnished or unfurnished.

For further information, address President Charles S. Murkland, or Prof. C. M. Weed, Secretary of the Faculty.

AGRICULTURAL EXPERIMENT STATION

This department of the college is provided for by the national government, at an annual expense of fifteen thousand dollars.

The act of congress provides,—

That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping, as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective states or territories.

NESMITH HALL.

Nesmith Hall, a brick building two stories in height, is used for the work of the Agricultural Experiment Station. It contains offices and working rooms, a reference library, a chemical laboratory, a bacteriological and microscopical laboratory, and an agricultural museum.

Nesmith Hall.

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BOARD OF CONTROL

HON. GEORGE A. WASON, *President*	New Boston.
PRES. CHAS. S. MURKLAND, *ex-officio*	Durham.
CHARLES W. STONE, A. M., *Secretary*	East Andover.
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STATION COUNCIL

CHARLES S. MURKLAND, A. M., PH. D., *President.*
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CLARENCE M. WEED, D. SC., *Entomologist.*

EDWARD P. STONE, B. S., *Assistant Chemist.*
FRED D. FULLER, B. S., *Assistant in Chemistry.*
FREDERICK W. HOWE, B. S., *Assistant in Chemistry.*
RUEL SEABURY ALDEN, B. S., *Farm Superintendent.*

PRIZE RECORD FOR 1894

SMYTH PRIZES

Given by Hon. Frederick Smyth, of Manchester, N. H.

Speakers:
1st. Fred W. Gunn.
2d. Lewis H. Kittredge.
3d. Frank S. Adams.

Readers:
1st. John L. T. Shaw.
2d. Abbie F. Chamberlin.

BAILEY CHEMICAL PRIZE

Given by Dr. C. H. Bailey, of Gardner, Mass., and E. A. Bailey, B. S., of Winchendon, Mass.

Frederick W. Howe, Hollis.

ERSKINE MASON MEMORIAL PRIZE

Fred W. Gunn, Keene.

Experiment Station Barn.

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ENTRANCE EXAMINATION PAPERS*

I. ENGLISH

The composition should be correct in spelling, grammar, and punctuation, and should show a clear purpose and an orderly method.

1. Write at least three pages on one of the following subjects:
   (1.) The Combat between Sohrab and Rustum.
   (2.) Sir Roger at the Play.
   (3.) The School Days of David Copperfield.
2. Correct the errors in the following sentences.
   (1.) The boy stood on the burning deck,
   Whence all but he had fled.
   (2.) I am going and see him this afternoon.
   (3.) He had n't seen what he had ought to do.
   (4.) Get up on to the platform.
   (5.) Try and read as many a good book as you can.
   (6.) I guess he will resign, for he told he was going to.
3. Which is the right expression:

He felt badly at his loss, or, He felt bad at his loss. If you substitute "discouraged" for "badly" or "bad" in the above, what part of speech will it be?

II. AMERICAN HISTORY

1. Give a brief account of the conquest of Peru.
2. What nations held territory in North America during the seventeenth century? What did each nation hold?
3. Give an account of King Philip's War.
4. Give an outline of the French and Indian War.
5. Give a brief but comprehensive account of the Siege of Yorktown (1781).
6. Give a brief account of the adoption of the Constitution.
7. Give the causes and results of the Mexican War.
8. Give a brief account of each acquisition of United States territory.

* Given as specimens of average papers.

9. Give an account of the principal military operations during the year 1864.

10. Explain the Emancipation Proclamation and the Alabama claims.

III. PHYSIOLOGY

1. Explain the structure of the bones. Name in their order those of the limbs.

2. Define the terms, *cartilage*, *ligaments*, *tendons*.

3. Explain the process of digestion. What four solvents act upon the food?

4. How is the blood purified?

5. What is the origin of the nerves that regulate sensation and motion? What the origin of those that regulate digestion?

6. Describe the organ of hearing.

7. Describe the organ of sight.

8. What is the effect of alcohol upon digestion? upon the liver and kidneys?

IV. ARITHMETIC

1. Reduce $\frac{12012}{103740}$ to its lowest terms.

2. Divide $\frac{3}{2}$ of $\frac{5}{6}$ by $\frac{\frac{5}{3}}{\frac{4}{6}}$ and subtract the quotient from $\frac{2\frac{1}{2}}{4-\frac{2}{3}}$

3. How many hectares in a rectangular piece of land 500 meters long and 25 meters wide?

4. The population of a certain city is 100,000. It has gained 20,000; what has been the gain per cent.?

5. Extract the square root of $\frac{6\frac{1}{4}}{2\frac{1}{4}}$ to five decimal places.

6. If 4 men build 19 rods of wall in $2\frac{1}{2}$ days, in how many days will 7 men build 20 rods?

7. A, B, and C formed a partnership, and cleared $12,000. A put in $8,000 for 4 months, and then added $2,000 for 6 months; B put in $16,000 for 3 months, and then, withdrawing half his capital, continued the remainder for 5 months longer; C put in $13,500 for 7 months. How divide the profits?

8. Find the simple, the annual, and the compound interest on $1,000 for 2 years, 5 months, and 7 days, at 6 per cent.

V. ALGEBRA

1. Define algebra, formula, coefficient, power, root, exponent, radical, term, factor, similar quantities.

2. From $3ax^2-(4a-2x)(x+2a)+a[y-(a+2y)]$ subtract $5a(x-y)+3a^2-2x^2(a+1)$.

3. Multiply $a^2x^{\frac{1}{3}}-3x$ by $b+2x^{-2}$.

4. Divide $4a^2y^{\frac{3}{2}}x^{\frac{2}{3}}$ by $-2a^3yx^2$.

5. $4x-5y=10$, and $3x+12y=7$. Solve for x and y.

6. Factor a^3-x^3; a^3+x^3; and a^4-x^4.

7. The sum of two numbers is a, and their difference is b. What are the numbers?

8. Multiply $\sqrt{-x}$, $-\sqrt{-y}$, $-\sqrt{y}$, and $\sqrt{y}$.

9. $\sqrt{x-16}=8-\sqrt{x}$. Solve for x.

VI. PLANE GEOMETRY

1. Define geometry, proposition, theorem, problem, axiom, postulate, corollary, scholium, right angle, perpendicular, parallel, magnitude, and form.

2. Define trapezoid, rhombus, regular polygon, apothem, sector of a circle and segment of a circle. Name and explain the different kinds of triangles.

3. Give expressions for the circumference and area of a circle. State the relations existing between similar areas.

4. Demonstrate that if a perpendicular be erected at the middle of a line, any point in that perpendicular is equally distant from the extremities of the line; also that any point without is nearer the extremity on its own side of the perpendicular.

5. Demonstrate that if two lines are cut by a third, making the sum of the interior angles on the same side of the secant line equal to two right angles, the two lines are parallel.

6. Demonstrate that in the same or equal circles two incommensurable arcs are to each other as the angles which they subtend at the centre.

7. Demonstrate that the opposite sides of a parallelogram are equal.

8. Demonstrate that triangles mutually equiangular are similar.

9. Construct a fourth proportional to three lines.

EXAMINATIONS FOR ADVANCED STANDING

Students passing the examinations in Ancient, Mediæval, and Modern History can take French iu place of the History of the first year.

I. ANCIENT HISTORY

1. Describe the Accadian libraries, and explain the manner in which they have been preserved.

2. Give an outline of the story of the War of the Seven against Thebes.

3. Compare the laws of Lycurgus with those of Solon.

4. Describe the different orders of Grecian architecture. Briefly describe the Parthenon.

5. Who were the great tragic poets of the Greeks? Upon what subjects did they write?

6. Give some account of the Stoics and the Epicureans.

7. Name and locate the natural entrances into the basin of the Mediterranean.

8. State the six provisions of the Licinian laws. Which provisions were effective?

9. Give an outline of the history of the second Sammite War.

10. Locate and, with a sentence for each, describe the following: Olympia, Ægina, Delphi, Thebes, Tarentum, Pannonia, Numidia, Etruria, Mauritania, Sardinia.

II. MEDIÆVAL HISTORY

1. Give an outline of the history of the kingdom of the Ostrogoths.

2. Explain the meaning of each of the following words: Janizaries, reliefs, escheats, aids, villeins.

3. What were the characteristics which distinguished the early Teutons?

4. Give an account of the Third Crusade.

5. In one hundred words give the history of Spain from A. D. 700 to A. D. 1500.

6. In the same number of words give the history of the Wars of the Roses.

7–8. Describe the following, using about fifty words for each: Tamerlane, Warwick (the "king-maker"), Simon de Montfort, Huss.

9. Give an account of cathedral building.

10. Draw a map showing the political divisions of Europe at the close of the Middle Ages.

III. MODERN HISTORY

1. Explain the causes that checked the progress of the Reformation.

2. Give an account of the Battle of Lepanto.

3. Give an account of the religious changes which took place in England during the Tudor period.

4. Give the history of the siege of Leyden.

5. Give an account of Catherine de Medici.

6. Give the history of the war undertaken by Louis XIV against Holland.

7. Give an account of the English revolution of 1688.

8. Give a brief account of each of the revolutions in France since 1815.

9. Give an outline of the history of the unification of Italy.

10. Draw a map showing the south-eastern part of Europe and the present political divisions.

CATALOGUE OF GRADUATES

NOTE.—The arrangement is: (*a*) Name in full. (*b*) Degrees taken. (*c*) Residence at time of entering college. (*d*) Occupation, etc. (*e*) Present residence.

1871.

William Preston Ballard, B. S., Concord. Farmer. *Concord.*
Lewis Perkins, B. S., Hampton. Civil Engineer. *North Adams, Mass.*
Charles Henry Sanders, B. S., Penacook. Architect and Merchant. *Penacook.*

3—

1872.

Edwin Bartlett, B. S., Bath. Farmer. County treasurer, 1883. *Kinsley, Edwards Co., Kan.*
Frank Alexander White, B. S., Bow. Farmer. *Bow.*

2—

1873.

Frederick Erasmus Eldredge, B. S., Kensington. Lawyer. *Tacoma, Wash.*
James Fred Smith, B. S., A. M. (1885). Instructor in Iowa College. *Grinnell, Iowa.*
Charles Henry Tucker, B. S., Plaistow. Carriage Maker. *Amesbury, Mass.*

3—

1874.

Millard Fillmore Hardy, B. S., Nelson. Graduated Theo. Inst. Ct. 1878. Clergyman. *Harrisville.*
Henry Abbott Sawyer, B. S., North Weare. Business. *North Weare.*

2—

1875.

Walter Herman Aldrich, B. S., M. D. (Univ. N. Y. City, 1880), Troy. Physician. *Marlborough.*
Frank Pierce Curtis, B. S., Stoddard. Manager of Store. *Greenfield, Mass.*

Frank Veranus Emerson, B. S., Lebanon. Manufacturer.
East Lebanon.

Charles Webster Hardy, B. S., M. D., (Mo. Med. Coll., 1881), Marlborough. Physician. *Waterville, Kan.*

Harvey Jewell, B. S., Winchester. Farmer. *Winchester.*

Charles Ormille Leavitt, B. S.,* Lebanon. Farmer. Died 1877.

John Loney McGregor, B. S., D. D. S. (Phila. Dental Coll., 1877), M. D. (1883), Whitefield. Physician. *Whitefield.*

Eliel Peck, B. S., Lebanon. Farmer and Printer, 1875–'80. Merchant. *Kimball, Minn.*

Ira William Ramsay, B. S., Walpole. Farmer. *Walpole.*

Orlando Leslie Seward, B. S., Keene. Architect. *Keene.*

Emery Mason Willard, B. S., Harrisville. Drug Clerk.
15 *Union St., Boston, Mass.*

11—*1

1876.

Herbert Cyril Aldrich, B. S., Troy. Insurance Agent. *Keene.*

Edmund Lawson Brigham, B. S., Jaffrey. Manufacturer.
Clinton, Mass.

Joseph Warren Butterfield, B. S., Westmoreland. Farmer.
North Montpelier, Vt.

Arthur Frank Chamberlain, B. S., Westmoreland. Commercial Traveller. 6543 *Woodlawn Park, Chicago, Ill.*

Anson Ballard Cross, B. S., Holyoke, Mass. Paper Maker.
Readsborough, Vt.

Warren Webster Kimball, B. S., Troy. Merchant. *Troy.*

Daniel Deeth Parker, B. S., Fitzwilliam. Manufacturer.
Gardner, Mass.

7—

1877.

Rollin Kirk Adair, B. S., Indian Territory. Farmer.
Locust Grove, Cherokee Nation, Indian Ter.

Homer Brooks, B. S., M. D. (N. Y. Hom. Med. Coll., 1881), Franconia. Physician. 342 *Washington St., Haverhill, Mass.*

John Washington Carson, B. S., Mont Vernon. Farmer.
Mont Vernon.

Charles Otto Chubert, B. S.,* Troy. Died.

Charles Albert Edwards, B. S., LL. B.* (State Univ., Iowa, 1880), Keene. Lawyer. Died, 1886.

William Francis Flint, B. S., Richmond. Farmer. *Winchester.*

Clinton Camillus Hall, B. S., Westmoreland. Farmer.
East Westmoreland.

John Goodrich Henry, B. S., M. D. (1880), Chesterfield. Physician.
Winchendon, Mass.

Charles Pitkin Hollister, B. S., North Montpelier, Vt. Farmer.
North Montpelier, Vt.

George Mirick Holman, B. S., M. D., Fitchburg, Mass. Instructor in Bryant & Stratton's Commercial College. *Boston, Mass.*

Charles Appleton Hubbard, B. S., Troy. Clerk. *Newton, Mass.*

Charles Augustus Wheeler, B. S., East Calais, Vt. Farmer.
Bracken, Coral Co., Texas.

Everard Whittimore, B. S., Fitzwilliam. Merchant. *Hudson, Mass.*

13—*2

1878.

Ezra Eastman Adams, B. S., Manchester. Auctioneer.
237 *and* 249 *Monroe St., Chicago, Ill.*

Elmer Kilburn, B. S., C. E.,* Marlow. Civil Engineer. Died, 1881.

Charles Edward Record, B. S., Fitchburg, Mass. Farmer.
Fitchburg, Mass.

3—*1

1879.

Charles Hardy Bailey, B. S., M. D. (1881). Physician.
Gardner, Mass.

Richard Clinton Chapin, B. S., Chicopee, Mass. Agent for Nonotuck Paper Company. *Holyoke, Mass.*

Lucius M. Cragin, B. S., Lempster. Farmer. *Springfield, Vt.*

Nathaniel Cutter Holmes, B. S.,* Amherst. Lawyer. Died, 1887.

Fred Charles Parker, B. S., Lempster. Merchant. *Acworth.*

George Henry Wilkins, B. S., M. D. (N. Y. Hom. Med. Coll., 1883), Amherst. Physician. *Palmer, Mass.*

6—*1

1880.

Charles Harvey Hood, B. S., Derry. Farmer. *Derry.*

1—

1881.

Edwin Thomas Aldrich, B. S., Troy. Insurance Clerk. *Keene.*

Henry Lyman Barnard, Troy. Clerk. *Troy.*

George Jordan Boardman, B. S.,* Lawrence, Mass. Medical Student. Died, 1886.

Edwin Franklin Bristol, B. S., Harwinton, Conn. Mechanic. *Ascutneyville, Vt.*

Artemas Terald Burleigh, B. S., Franklin. Merchant. *Tilton.*

Frank Dana Ely, B. S., Cavendish, Vt. Business. *Cavendish, Vt.*

Sanford Eugene Emery, B. S., LL. D. (Albany Law School, 1886). Proctorsville, Vt. Lawyer. *Proctorsville, Vt.*

Charles Herbert Hazen, B. S., Hartford, Vt. Farmer. *Hartford, Vt.*

Frank Marston, B. S., Hartford, Vt. Business. *Olcott Falls, Vt.*

William Augustus Megrath, B. S., M. D. (1885), Cavendish, Vt. Physician. *Loudon.*

Fred Townsend Stanton, B. S., Strafford. Farmer. *Strafford Corner.*

Victor Hugo Stickney, B. S., M. D. (1883), Tyson, Vt. Physician. *Dickinson, Dak.*

Samuel Austin Wallace, B. S., Ph. G. (Boston School of Pharmacy, 1886), West Hartford, Vt. Druggist. *Crookstone, Minn.*

George Herbert Whitcher, B. S., Strafford. Professor of Agriculture, and Director of Experiment Station. *Durham.*

14—*1

1882.

Harvey Lincoln Boutwell, B. S., LL. B. (Boston Univ., 1886), Hopkinton. Lawyer. 209 *Washington St., Boston, Mass.*

Dana Justin Bugbee, B. S., North Pomfret, Vt. Agent for Publishers. *North Pomfret, Vt.*

Robert Fletcher Burleigh, B. S., D. V. S. (Am. Veterinary Coll., 1885), M. D. (1887), Franklin. Instructor in Veterinary Science 1885–'88. Professor of Physiology and Veterinary Science, Kansas State Agricultural College, 1888–'89. Physician. *Rochester.*

La Forrest John Carpenter, B. S., Surry.

Edwin Preston Dewey, B. S., Hanover. Civil Engineer. *Malden, Mass.*

George Andrew Loveland, B. S., LL. B. (Univ. of N. Y., 1886), Norwich, Vt. Weather Bureau. *Crete, Neb.*

John Wright Mason, B. S., Hanover. Business. *Des Moines, Iowa.*

Harlan Addison Nichols, B. S., Derry. Weather Bureau. *Colorado, Texas.*

Frank Elmer Thompson, B. S., Stark. Lumberman. *Ridgeway, Penn.*

9—

1883.

Elmore Ferdinand Arnold, B. S., M. D. (Univ. City N. Y., 1885), Londonderry, Vt. Physician. *Londonderry, Vt.*

Frank Landor Bigelow, B. S., Proctorsville, Vt. Instructor in Mathematics and Sciences, Goddard Seminary, Barre, Vt., 1883–'86. Business. *Rutland, Vt.*

Frederick Stocks Birtwhistle, B. S., Troy. With American Consulate. *Cartagena, Colombia, S. A.*

Noice D. Bristol, B. S., Harwinton, Conn. Clergyman. *Hamilton, Kan.*

Fred Plummer Comings, B. S., Lee. Teacher. *South Yarmouth, Mass.*

Frank Harry Follansbee, B. S., Canaan. Railway Mail Clerk. *Canaan.*

Adams Clark French, B. S., Franklin Falls. Theological Student. *Chicago, Ill.*

James Edgar Gay, B. S., Tunbridge, Vt. Woolen Manufacturer. *Cavendish, Vt.*

Elmer Daniel Kelley, B. S., Franklin Falls. Farmer. *Franklin Falls.*

Alvah Benjamin Morgan, B. S., Canaan. Drug Clerk. *Lebanon.*

William Lincoln Whittier, B. S., Deerfield. Farmer. *Deerfield.*

Charles Minot Woodward, B. S., Hanover. Instructor in Agriculture, 1883–'84. Teacher. *Corsicana, Texas.*

12—

1884.

Ernest Smith Cummings, B. S.,* Lee. U. S. Signal Service. Died 1886.

Fred Carlos Davis, B. S., South Reading, Vt. Lawyer. *Springfield, Vt.*

Sylvester Miller Foster, B. S., Riverhead, L. I. Insurance Agent. *Riverhead, L. I.*

Herbert Harvey Kimball, B. S., Hopkinton. Weather Bureau. *Washington, D. C.*

Moses Bisbee Mann, B. S., Benton. Custom House Official. 74 *Upham St., Malden, Mass.*

George Milton Moore, Plymouth, Vt. Merchant. *Tyson, Vt.*

Ziba Amherst Norris, B. S., Lyme. Merchant. 1677 *Washington St., Boston, Mass.*

Edwin Chapin Thompson, B. S., Lee. Weather Bureau. *St. Paul, Minn.*

8—*1

1885.

George Ellsworth Adams, B. S., Weston, Vt. Weather Bureau. *Fort Duchesne, Utah.*

Ruel Seabury Alden, B. S., Lyme. Superintendent of College Farm. *Durham.*

Walter Eugene Angier, B. S., C. E. (1887), West Swanzey. Civil Engineer. *Memphis, Tenn.*

Edward Alonzo Bailey, B. S., West Swanzey. Attendant in Insane Asylum. *Winchendon, Mass.*

Phillips Greenleaf Bickford, B. S., Lyme. Teacher. *Farmington, Wash.*

Andrew Walter Brill, B. S., Riverhead, L. I. Seedsman and Florist. *Floral Park, Queens Co., N. Y.*

Paul Cuff Brooks, B. S., Boston, Mass. Clerk. 25 *Westminster St., Boston, Mass.*

Frank Jay Emerson, B. S., Epping. Clerk. *Portsmouth.*

Allen, Hazen, B. S., Hartford, Vt. Chemist of State Board of Health. *Lawrence, Mass.*

George Mayo Mullins, B. S., Londonderry. Farmer. *North Londonderry.*

Albert Henry Wood, B. S., Lebanon. Associate Professor of Agriculture. *Durham.*

11—

1886.

Frank Albert Davis, B. S., South Lee. Weather Bureau. *Boston, Mass.*

James Ellsworth Harvey, B. S., Surry. Photographer. *Surry.*

Belezar Stoianoff Ruevsky, B. S., Sistova, Bulgaria. Student of Veterinary Science. *Sistova, Bulgaria.*

Madison Templeton Thurber, B. S., Webster. Physician. *Grafton.*

Edward Hills Wason, B. S., New Boston. Lawyer. *Nashua.*

George Pillsbury Wood, B. S., Lebanon. Civil Engineer. *Roanoke, Va.*

6—

1887.

William Sprague Currier, B. S., Norwich, Vt. Weather Bureau. *Cleveland, Ohio.*

Arthur Woodbury Hardy, B. S., C. E. (1889), Hopkinton. Civil Engineer. *City Engineer's Office, Salt Lake City, Utah.*

George Albert Sanborn, B. S., Rochester. Teacher. *Rochester.*

Hiram Newton Savage, B. S., White River Junction, Vt. Engineer of San Diego Land Improvement Co. *National City, Cal.*

Bion Leland Waldron, B. S., Strafford. Weather Bureau. *Galveston, Texas.*

5—

1888.

Melvin Burnside Carr, B. S., North Haverhill. *Boston, Mass.*
Herbert Grant Davis, B. S., South Lee. Thomson-Houston Co. *Lynn, Mass.*
Edwin Chandler Gerrish, B. S., Webster. Civil Engineer. Office of Locks and Canals. *Lowell, Mass.*
William Nelson Hazen, B. S., C. E. (1890), Hartford, Vt. Civil Engineer. *East Berlin, Conn.*
Edward David O'Gara, Hanover. Farmer. *Hanover.*
George Elmer Porter, B. S., M. D. (1892), Hartford, Vt. Physician. *Chatham, Mass.*
George Jonathan Sargent, B. S., Canterbury. Civil Engineer. Office of Locks and Canals. *Lowell, Mass.*
John Warren Smith, B. S., Grafton. Weather Bureau. *Boston, Mass.*
George Elwin Walker, B. S., Littleton. Farmer. *Littleton.*

9—

1889.

Fred Harvey Colby, B. S., Hopkinton. Civil Engineer. *Zillah, Yakima Co., Wash.*
Linwood Carroll Gillis, B. S. Editor and Publisher. *Hanover.*
Louis Jerome Hutchinson, B. S., Norwich, Vt. Electrician. *Boston, Mass.*
John Lawrence Norris, B. S., Lyme. Clerk. 1677 *Washington St., Boston, Mass.*
Charles Walter Earl Scott, B. S., Winchester. Clerk. *Winchester.*
David Elmer Stone, B. S., Hartford, Vt. *Durham.*
Fred Washburn, B. S., West Springfield. Business. *Laconia.*

7—

1890.

John Young Jewett, B. S., Gilford. Civil Engineer. *Lakeport.*
Joseph Franklin Preston, B. S., Hanover. Clerk. 570 *Columbus Ave., Boston, Mass.*
Elihu Quimby Sanborn, B. S., Webster. Machinist.
Clarence Ira Slack, B. S., Norwich, Vt. With Vermont Marble Co. *West Rutland, Vt.*

4—

1891.

Ernest Gowell Cole, B. S., Hampton. Merchant. *Hampton.*
Russell Marden Everett, B. S., Chester. Teacher. *Dover, N. J.*

Edward Payson Stone, B. S., Canaan Centre. Assistant Chemist of Experiment Station. *Durham.*

3—

1892.

Percy Lovejoy Barker, B. S., Milford. Civil Engineer. *Hanover.*

Fred Driggs Fuller, B. S., Hanover. Assistant in Chemistry, Experiment Station. *Durham.*

Arthur Bennerzett Hough, B. S., Lebanon. Farmer. *Lebanon.*

Edward Monroe Stone, B. S., Marlborough. Civil Engineer. *Hanover.*

4—

1893.

Wilton Everett Britton, B. S., Keene. Horticulturist, Experiment Station. *New Haven, Conn.*

Frank John Bryant, B. S., Enfield. Teacher. *Enfield.*

Charles Elbert Hewitt, B. S., Hanover. Post Graduate Student in Electrical Engineering. *Cornell University, Ithaca, N. Y.*

Charles Lincoln Hubbard, B. S., Fitzwilliam. Draughtsman. *Providence, R. I.*

Orrin Moses James, B. S., Northwood. Civil Engineer. *Northwood Narrows.*

Arthur Whitmore Smith, B. S., Norwich, Vt. Post Graduate Student. *Wesleyan University, Middletown, Conn.*

6—

1894.

Bert Sargent Brown, B. S., Hanover. Foreman. *St. Johnsbury, Vt.*

Fred Willis Gunn, B. S., Keene. Student at Y. M. C. A. Training School. *Springfield, Mass.*

Frederick William Howe, B. S., Hollis. Assistant in Chemistry, Experiment Station. *Durham.*

3—

SUMMARY

Graduates, 1871–'94, inclusive (living, 146, dead, 7)	153
Agriculturists	30
Architects	2
Business pursuits	39
Chemists	3
Clergymen	2
Civil and Mechanical Engineers	11
Electricians	2
Lawyers	5
Manufacturers and Mechanics	8
Physicians	13
Post Graduate Students	7
Teachers	10
Unclassified	2
Unknown	2
Weather Bureau	9
Twice classified	2
Students in attendance, 1894–5	163
Number connected with college, 1871 to 1893, inclusive	432

CALENDAR.

1894.

JULY.

S.	M.	T.	W.	T.	F.	S.
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1895.

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1895.

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DECEMBER.

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29	30	31				

COMMENCEMENT ADDRESS

THE NEW IMPULSE IN EDUCATION

BY

HON. EDWIN WILLETS, WASHINGTON, D. C.

DELIVERED JUNE 6, 1894

COMMENCEMENT ADDRESS

BY HONORABLE EDWIN WILLITS, WASHINGTON, D. C.

The New Impulse in Education.

The world at this date has not agreed upon the requirements of a good education. Who taught Shakespeare grammar? Whence came his marvelous command of the English language? The librarian of one of the largest libraries in the country, himself a classically educated gentleman, recently remarked that he had seen and read more than five hundred, and had in his possession more than one hundred, letters written by Henry Clay, and that he had never found a false sentence or a mispelled word. Whence got he that accurate and persuasive diction? This same gentleman had read more than one hundred letters of Andrew Jackson; all were perfect in punctuation, in grammar and in rhetoric, and among them all he found but one mispelled word. Who taught him grammar or rhetoric? Clay was admitted to the bar before a copy of Lindley Murray's grammar reached these shores, and Andrew Jackson had become one of our most vigorous and renowned lawyers west of the Alleghanies before Murray issued his first edition. What library or museum has at this day a dog-eared copy of a grammar or rhetoric used or studied by Abraham Lincoln? Where is the evidence that Lincoln could parse a single sentence according to rule; and yet his fifteen minutes' speech at Gettysburg will be classic in literature long after the world shall have forgotten that it was preceded by a nearly two hours' oration by Edward Everett, in studied phrase and sounding periods.

Many hard questions are being asked at this time and the mood is willing, if not pliant. Why is it that from the time of Plato down, education has been essentially linguistic, including Latin, Greek, Grammar, Spelling, Orthography, Rhetoric,

Literature, Logic, Elocution, Oratory? The only competitor has been Mathematics, and that to only a moderate degree. It has been practically conceded that numbers and letters were the essential basis of mental discipline. But what is discipline? "The best study of mind is mind," was the motto. "Know thyself" was the range and scope of human effort. In all ages the boy was sent to the master of rhetoric, or to walk with some philosopher, to learn to speak fluently, and to reason and speculate cogently. This was discipline. The highest aspiration was to be a talker; the greatest man was the orator. Next to them was it to be a writer. We have not quite got over that feeling in this age.

Somehow the impression prevails that all other callings are menial. Let us canvass the reason for this.

1. In the first place, our literature is full of it. Why not? Literature lives by literature, and it should magnify its office. So from the first dawn of intellectual life the child learns that poetry and rhetoric and logic and thought and sentiment are of a higher plane than all else. Everybody sometime in his life drinks at the Pierian spring. There is a fascination in the power of an orator. I asked a man worth three millions, on the floor of congress, just after a fifteen minutes' speech by a noted public man, what he would give to be able to make that speech. "Give," said he, with all the humility of a man low down in the scale of being, "Give! I would give you a third of all I am worth." One young lady goes into the marriage market with no capital but her beauty; another with nothing but a substantial bank account. Literature rates the one high; the other low. Why? They both have commodities for sale and generally sell them very cheap. I cannot stop to enumerate all the fine distinctions and grades of what is high and what is low in literature and poetry, what is noble and what is menial; but it may be that we have not had a sensible judgment by an impartial, well equipped judge.

2. Somehow the world has the notion that as talking and writing are mental exercises, all other intellectual exercise is material and of a grosser type. Thought is divine; hence the mental philosopher is godlike!—all others are of the earth, earthy. Now I grant the divine essence of thought; it is the

life that is like unto that of Jehovah. But Jehovah did not sit on his throne and complacently study himself. He projected himself into creation and all along the footsteps of his work he established law and order and harmony. His mind went into his works, and it is found there to-day as truly in the material universe as in man's mental endowments. Who shall say that the man who follows the line of God's thought in his material universe has not the stars under his feet as truly as the man who seeks to understand the laws of his own mind? They are both God's laws, and their proper study is as noble in the one as in the other. The creation is the fruitage of Divine energy, and the man who enters it and traverses in a measure its development, and listens to the general symphony of its manifestations is on as high a plane as he who hides himself in his own personality, who tries to determine how sense becomes perception and reason becomes judgment. Who shall say that there is not discipline—mental discipline—of as high a grade in the one as in the other? Who shall say that Herschel and Newton and Gallileo and Kepler and Davy and Faraday, Watt and Stephenson were not as highly endowed mentally as a master of rhetoric or a propounder of syllogisms. The fallacy of the position so long and so persistently maintained by the schools is in the misconception that thought finds expression only in language, and that therefore its highest function is in talking. George Washington could not make a speech but he could command an army, found a nation, give sound advice, and die worth nearly a million of dollars. His line of thought was not exactly that of the typical college president, but the world will give him a reasonable share of intellectual credit. Napoleon shook every throne in Europe, but back of his thundering squadrons was a mind as active, as well poised, and as well disciplined as those of the most learned linguists in his dominions. These two men saw the relation of things and utilized them. In their respective spheres they shaped events with a purpose and with forethought, and not by chance.

So in the domain of science the best thoughts of the best men of the world have found full scope. The linguist sees only the gathering of a few sporadic facts, as isolated as the grains of a bag of sand, but another man with a ken almost divine will

hitch these facts together and find a law that binds the fact to the throne of God. This law has discipline in it, and every time a man has struck it he has been raised head and shoulders above the common head of rhetoricians and metaphysicians. Aristotle made a machine that facilitated the hitching of these facts together so as to find the law, and Bacon improved upon it. Sometimes these can evolve the law out of their own imaginations and hunt up the facts to demonstrate it. One of the most pleasing incidents in my early manhood was the stringing of the cable of the first suspension bridge across the Niagara river. You will recollect that a kite was used first to draw over the slender thread, which drew another larger, and that a larger one still, till finally the strong cable hung from shore to shore, bridging the mighty chasm; in the same way these men of science send across into the unknown beyond their slender thread and pass over it, fact after fact, till they find that their tentative thread is a law, as strong as the sinews of the Almighty. Again other men with less imagination hitch together their facts that seem in some way to have a relation to one another, spinning them out as the spider does his web into the unknown and the impassable, till like the same web blown by the breezes in the darkness it strikes something to which it fastens, and lo, a law fastened to the throne of God! Here are the induction and deduction of the subject, and there is discipline in them—reason, but no rhyme; thought in its highest and truest sense, but not in set phrases of the dialectician, who assumes a superiority not warranted by the results. No law of nature is in essence gross; otherwise the Creator of the law must himself be gross. A man who walks with God through his material universe is good company for anyone, and the world is taking him into good society at last.

There has been a great change in public sentiment on this subject in the last fifty years. What shall constitute a true education? The old cast iron plan of the classics and metaphysics has been broken, and the world is beginning to appreciate the fact that there is mental discipline in the study of the sciences, and at least for the age, as good discipline; that while in a sense it is different, there is as much vital strength and as much real breadth as in the old plan.

Not only this, but in the last twenty-five years men have begun to question purely intellectual education. There is a growing sentiment that the hand should be educated as well as the mind; and that in that education the mind would lose nothing of its native power, but would bring to its aid a skilled coadjutor. This means that manual labor is to be coveted, and not scorned.

A HOBBY.

Now, if I have a hobby it is in line with this changed sentiment. I am out of patience with this snobbish scorn for manual labor. I have a warm heart for a handy fellow, who can set up a bedstead with facility, or put up a stovepipe without profanity. What a helpless set of people we Americans are likely to become, if we do not put our hands to work as well as our wits; dependent upon importing our artisans and our hired girls. To be just, however, we must not be too sweeping. Our farmers still believe in good, wholesome, daily toil. That is the reason why the farmer's boy comes to the front in the city; why, from the farm are born into civic life the kings of commerce and the royal lineage of law, letters, and theology.

THE FARMER.

I hope it is not out of place on this auspicious occasion, and in the shadow of this institution, founded as it is to-day, to speak a few words about the farmer; not to make a plea for him; he does not need it; but to state a few facts.

1. In the first place, every man has a right to be a farmer; it is his natural right. Farming was mankind's primary right and, like all primary rights, it is fundamental. The world could get along after a fashion without kings and princes, lawyers and merchants, poets and, perhaps, priests, but let the world's agriculture be blasted and mankind would disappear as the snow flake in Mother Earth.

2. It is no disgrace to be a farmer. There is no disgrace in the proper exercise of a natural right. A man has no natural right to steal; therefore a thief is discarded from decent society. No man has a natural right to make another man a drunkard.

He who does so deliberately is marked with infamy. His occupation is disgraceful and always has been; policed, licensed, prohibited, regulated, discouraged. Not so with the farmer. The world has never policed, licensed, or regulated him. The sun shines in regal glory around his labors and the rain falls in benediction upon his fields. There is no disgrace there, but steady, honest co-operation with nature.

3. A farmer need not be a fool. Agriculture in the long ages has had to endure very much of ignorance, but nothing so much indicates its vitality as that it has survived the imposition. Agriculture and the Church have taken to their motherly bosom many crippled sons of Adam, but because in their maternal love they have not driven them forth, it is wrong to infer that they are the dumping ground for imbecility. It is the stock sneer of men who never, if they could help it, did a square day's work in their lives, to depreciate farming; any worthless cub, in their estimation, is good enough to be a farmer; while it is apparent to all candid minds that there is not in the whole universe of mind and matter, a field of wider scope for the best intellects than agriculture.

The time has come, so far as agriculture at least is concerned, to repel the sneer; and this generation has taken the work in hand to place the farmer in the position to which he is entitled. Heretofore asceticism has had its run through the farmer's house as well as in society. The farmer boy has heard it more than hinted that there is a higher life, an easier life, than the life on the farm. It matters not that nine tenths of these find, all too late, that it is a mistake; the old ascetic's notion that he who works the soil becomes gross, and that the less one has to do with it the more he attains the "All Soul," that has come down through the ages. We have superstitions, and impulses in our blood a thousand years old. This is one of them that has crawled out of a cloister. Heretofore, the so-called learned professions have had the right of way in literature; but today some of the keenest minds and sharpest pens are enlisted in the cause of labor on the farm and in the shop.

THE ARTISAN.

This reference to "the shop" has a significance at this time

that almost equals that relating to the farm. This generation has sent a large block of our population from the country to the city. It is fortunate for the city that so large a proportion of its increasing numbers is from the country. It is the country blood that gives health to the city life. But this large increase of city population has its problems and its perils. The farmer's son who leaves the green meadows for the golden pavements has industry and vigor and integrity. He is generally safe and sure. But what of the farmer's city grandson? What shall he do? The chances are that he has no habit of industry, and instead, a scorn for work. No trade or occupation and no will to acquire one, or will to exercise it, if he had one. He lives by his wits. His education has sharpened his wits without supplying the proper motive and the proper object upon which to operate. The result is, he preys upon society.

Our prisons are filled with occupationless intelligence. Give the city boy something to do, systematic, daily labor, and take him off the sidewalk, and you will, or may, diminish your prisons one half. Give him something that requires skill and intelligence. Busy fingers rarely steal. Sin of all kinds is the product, generally, of the unoccupied mind and heart and hands of man. If St. Anthony had washed himself, at least, once a week, had taken off his hair shirt and had turned his cell into a workshop, he would have seen no devils to fight. The best way to cool off a passion or control an appetite is to side track it into some laudable industry. This generation is waking up to the subject and from all quarters is coming up the demand that the state shall encourage labor, for labor's sake, on the farm and in the shop; the demand that society shall throttle the ascetic notion that manual labor is unmanly. It is a mistaken idea that learning a trade is not education, that the ability to work at some useful occupation does not enter into and compose an essential part of a man's intelligence. You remember what Ruskin says: "A boy cannot learn to make a straight shaving off a plank or drive a fine curve without faltering, or to lay a brick level in the mortar, without learning a multitude of other matters which lip of man could never teach him." A man that can shoe a horse well knows

more than the man holding the bridle. Skill is intelligence applied, and applied intelligence counts for more in the world than stores of knowledge unapplied. Give a man both knowledge and skill and you have a well-rounded intelligence; these, with a moral and religious training, will do much to keep him outside the prison walls, outside the criminal class.

But it is said that this new movement ignores culture. I deny it, when properly understood. There is to be cultivated intelligence in the new order of things. There may be, and it would be no great loss if there be, less of the lackadaisical, thin blooded, so-called culture, which has always preceded degeneracy. A broad-chested culture should be the companion of a virile race.

WHAT IS CULTURE?

The crude, uncultivated man is a waster of energy. Nature is exhaustless in power and resources, prolific in products and wasteful beyond computation. It takes a million acorns to make a single oak. A single pair of plants or insects, if given free fecundity, would not leave standing or living room for any other living thing. So nature is an exterminator as well as a producer. Progress is what is spared from extermination. Culture aids the sparing. Barbaric and half-civilized men killed more men in battle with clubs and spears and swords than the gatling gun of modern warfare. Codes and culture go hand in hand. Even the prize ring howls down the man who hits below the belt.

Culture is the gloved hand—it is the power without the laceration. Culture is an economist—it saves blood and with blood, life. But life has a voracious appetite and must eat or starve; so in the end nature as an exterminator would bring about equilibrium and no progress would be attained. What sense in hospitals and asylums, in aid societies and humane organizations if the magazines are empty? Better knock the aged and crippled and leprous in the head at once and save the supplies for the sound in body. There are just as many deaths in this world as births—what matters it to save or prolong life, if in the end nature restores equilibrium in spite of

culture? True, but saved and prolonged life adds to the stock on hand at any given time, and with it so much more of potentiality and possibility.

Culture, then, having increased life and wants, has assumed the responsibility of increased production. Now culture is not a creative faculty. It is simply an assistant to Nature and genius. It takes them by the hand and leads them to the best results. There is, some one has said, "always the best way of doing everything if it is but to boil an egg." Culture digs up the soil, waters the roots and increases the production many fold. It lubricates the machinery and the busy hum of the shop sings with an inspired joy over the birth of a new power. It grades down highways so that this increased production may come together and exchange wants and good wishes, and by these means leads man into higher life.

Neither is culture a negative quality, vapid, inane; it is health and good order. To begin with, it is a respecter of the rights of others. Nature has no regard for rights. There is eternal enmity between sticks and stones, rocks and stream, earth and sea, fire and water, big fishes and little fishes, wolf and lamb, hawk and bird; and of all things man is the most vicious. He not only destroys his fellows but he destroys himself—his appetite leads him captive to an untimely grave. Culture steps in and says: "Hands off—off from property, from life, from crime and vice," and the destruction is stayed. There is no creation here, but a saving of energy and production. The economy of equal rights has never been weighed or measured. Its history is that of civilization. Its history has never yet, in my judgment, been properly and justly written, for the reason that publicists have based progress too much on force. and political ethics on policy and material wealth. Force is not culture; wealth is not civilization. I protest against the brute element in our histories, and the mathematical tendencies in the literature of our political economists. Conscience has no more place in either than in a demonstration of mathematics. There was a sense of right before there was a law against larceny. Force did not make the law. I grant you force enforces it, but robbers never made a law against robbing. Force can quell a man, but it never converts him. It diminishes crime, it is true,

by the terrors of its penalties, but conscience and culture diminish it ten-fold more by withholding the hand from the criminal act. The shame of vice in the presence of virtue, the getting behind screens and into dark alleys, the putting on of seeming virtue in the presence of good society, is a deference to the majestic power over man which conscience and culture sway.

Two men meet on a public highway, with equal rights to the common path. In the "olden time" they would have gone at one another with club or sword as fiercely as two mad bulls upon the western prairie, to prove who might be the better fellow. To-day each instinctively turns to the right and passes with a "God speed thee, brother." This is not from fear or force. Neither is armed, neither thinks of strife. Custom, but another name for culture, controls the act, and the custom is based upon the sense of equality and equal rights, the right of way for every human being on the globe. The fact that it is a highway and not a war-path is due to civilization, the culture of the ages. Yet we have philosophers who resolve all this chance, this so-called culture and civilization, into force and self-interest. Who thinks of force and self-interest in benevolence, in giving every man his due in full measure, in equal rights, in telling the truth, in the tear of sympathy, in the voice of affection, in the deference to old age, in the thousand and one acts that culture has made so easy and so spontaneous? Habit, they say, has made them easy and spontaneous. Well, call it habit if you will ; that is but another name for culture, the constant holding up of truth and right before the mind till they are mirrored in the soul—till self interest and force, if they ever existed, have been eliminated from human thought and human motive. I prefer to believe that the good qualities of our being have been cultivated, have been tilled, have been dug around, fertilized and watered till there has been a harvest of culture, of good for the sake of good, of justice because it is right; that it is, as Emerson says, "The suggestion of best thoughts," instead of the demonstration of selfishness.

Of course, all these manifestations of the finer sensibilities pay in the long run, and Poor Richard can well say that "Honesty is the best policy," but the better and sweeter fruits

grow in the life that exemplifies this condition of culture without a thought of policy. Then there is evidence of culture. As soon as it smacks of tariff, of the shop, of policy, it is greed not culture. They pay, not because they are politic, but because they are in harmony with truth and truth elevates.

This culture is the unwritten law that compels society to do the right thing, at the right time, in the right way. Its order is an impulse rather than a law. When it has become a second nature, if by chance it never was first nature, it raises the race barbarism to civilization—the whole plane of manhood is elevated.

This general culture, then, is not a matter of a day nor an age. The elements of a constitution are to be found in the first glimmer of history. Our constitution, written little over a century ago, in many of its essentials is so old that the memory of man runneth not to the contrary. Law and liberty, culture and civilization, have come to us hand in hand, almost with equal pace. In the rapacity of the race, in the blood and wrong, in the fierce struggle for dominion, in the contest between peasant and baron, king and noble, in the dark hours of the darkest night, to humanity and human rights, amidst all, there comes down to us the occasional gleam of a better life, a brighter hope, as the harbinger of the peace and good will to all men that sometime is and was to come. May we help the advent of that glorious day by each one's attention to our personal culture, so that in the aggregate there shall be shining particles enough to golden the mass.

Much has been said and written about the means of culture. Some attribute its growth to the cultivation of letters, some to the study of man as man. So far as literature has preserved the best thought of men, it has furnished the soil for an increased product of cultured thought. Reason and memory are the primal faculties that distinguish us from the brute creation. Literature has embalmed them for the future. Aristotle invented the tool which has been a labor-saving machine in the region of classified thought from his day to this. Homer sang the song that has sounded its manifold changes in poetry for centuries. These men and others too numerous to mention invented processes and formulated aspirations that have been

inherited by succeeding times as so much capital for future intellectual growth and culture. How far mankind has improved upon the models set is an open question, but there is no doubt that at least in so far as they have led we have followed from barbarism to civilization.

Again there are those who believe that the study of Nature and Nature's laws, as embodied in the physical universe, accomplishes the most in the development of culture. To them comfort has almost been the synonym of culture. The man who made a tool to dig the soil, to fell the tree and shape it, to forge the iron, to build the home, and to make other tools for use and defense, was, they argue, a greater benefactor than Homer or Phidias, or the long line of poets, artists, orators, and logicians. A man with a comfortable home and clothing and certain and abundant food, has in the estimate of these philosophers made greater strides towards civilization than from all other causes combined. There is much force in the claim, for a song is but poor satisfaction to a hungry stomach, and there can be but little room for culture in a life devoted to perpetual struggle against famine and gold. The highest culture can come only to those independent of the elements, to those who have leisure which follows means temporal and intellectual.

Again, the claim is made that the chief source of the world's civilization comes from commerce, and by this is meant not only the exchange of commodities but the mingling of men in the many relations of society, the attrition of mind with mind, the comparison and satisfaction of wants, the desire for social intercourse, the necessary adjustment of conflicting interests, from which are expanded laws, customs, and good order. This claim is founded largely upon the fact that culture, as understood by the publicists generally, is rarely found in sparsely settled or isolated communities; that it is most highly developed in such nations only as are largely the sources of or are on the highway of the world's traffic. The man who has wants seeks the man who can satisfy them. The mutual relation is of advantage to both. Each is the debtor of the other and each seeks to conciliate and accommodate the other. This dependence upon one another ameliorates the condition and character

of both. A bargain is a long step in advance of rapine. A contract is the seed wheat of civilized society. It implies good faith, honesty, ability to perform, and industry and exertion to fill the obligation. Out of it grow credit, public and private enterprise, fixed purpose, and a stable condition of affairs. Confidence fills the sails of every sea and runs the busy wheels of the world's industries. This, in truth is good soil for culture.

UNION OF CULTURE AND LABOR.

There was comparatively little of the ascetic spirit in Greece and Rome in their best days. The physical powers were trained as well as the mental. After the downfall of both the world went into the dark ages, from which it emerged divided into two classes, monks and warriors, the monasteries including nearly all the intelligence and religion, the chivalry and the serfs but little of either. It took centuries to open the cloisters and diffuse their stores of knowledge and their habits of study and their means of culture among the masses. The divorce of the body and the mind has been of long standing, and modern times are slowly reuniting them.

It is for the best minds of our day to study the problem of this new impulse, and to devise the best methods of joining hand and eye, heart and will, intelligence and culture, in the generation just coming on to the threshold of life, so that it shall know how to work, at what to work, and not to be ashamed of work, and yet to preserve and promote true culture.

In view of all this, what is the lesson for New England, the source of so much to be praised by every patriotic citizen, the exemplar of thrift, liberty, intelligence, and culture to a mighty nation? She has depleted herself for the general good. Is her vitality waning? Are her strength and resources being exhausted? I have not taken much stock in the allegations, inspired by the hope, it may be, that she has about quit the raising of men, raising them in the fullest sense, for the west. There is, perhaps, just enough truth in the assertion to give it feet to run upon. Let us see.

It costs a thousand dollars to raise an able-bodied man.

This includes taxes, doctor's bills, and prayer meetings. Every able-bodied immigrant who reaches our shores with pluck, willingness to work, good habits, good morals, and loyalty to his adopted land, is a thousand dollar addition to its potential energy, its producing capital. In ante-bellum times a hearty Virginian slave was worth a thousand dollars in the open market for the cotton fields. It takes the substance of four acres of rich virgin soil to produce a mature man. Twenty-one years of annual cropping without the recuperative energies of nature and restoration by artificial means will make the soil as sterile as a bean-pod. The impoverishment of the soil of New England and Virginia is not due alone to the products carried off to market nor to the substance washed from their hills into the sea, but is due in large part to the substance that has gone into the men and women reared thereon, to the human beings that have walked away with the substance of the acres on their backs, in their bones and blood and muscles and in their brains. In the case of New England the great west has reaped a human harvest raised for its benefit without cost to itself and with immense loss to the east. In the case of Virginia the southern cotton fields were manned, equipped, and carried on by Virginia muscle grown at the expense of Virginia soil.

It costs, therefore, to make a man; it costs immensely to make a million men. It costs to make a generation, ten generations of men. Unless therefore science and intelligence handle the plow three generations will cart off or walk away with the productive capacity of a homestead; the more and denser the homesteads, the sooner the country will be despoiled of its virtue, fecundity, and fertility. Bear in mind that in large measure the multitudes you have sent forth to fructify and replenish the earth were warmed and impelled by wholesome farmer blood that had in it a strain of granite and of hardy New England rural life.

In so far as the agriculture of New England shall depreciate so far will your race lack that tone and that vigor that commands the respect and dominates the affairs of the communities of which it shall become citizens. It is important, therefore, that this primary source of its power and vitality should be

promoted and preserved. It is with surprise and pleasure that we of other states note the efforts you are making to restore your forests and farms, to put intelligence into your agriculture, to adapt your crops to changed conditions caused by cheap transportation, to ennoble the occupations and diversify the products of husbandry. It is with peculiar pleasure that I am with you to-day to witness this new seat of learning dedicated to Agriculture and Mechanic Arts in the very heart of New England. It is rendered possible by the foresight and patriotic impulse of a New England man, and promoted by another from your own state. Every state and territory in the Union will think none the less of the founder of the Industrial Education which these colleges inaugurated, and so fitly represent, that he came from "sterile" New England. It was born of her necessity, but is proving the most wholesome and satisfactory element in the education of the age. If the good people of these six New England states will stand by the possibilities of their Agricultural and Mechanical college, and will make these possibilities verities, they will retain their ascendencies. If they do not, what is now perhaps approaching equality will simply precede her decline and fall, and we may and will begin to write her history now. New England is the Anteus of the nineteenth century. Born of Neptune and Terra, she will be invincible so long as she keeps in contact with her mother, Earth. May no modern Hercules lift her feet therefrom and strangle her in the air.

COLLEGE CALENDAR.

1894,

September	6.	First term of fifteen weeks began—Thursday morning.
December	19.	First term ends—Wednesday night.

Winter Vacation of Three Weeks.

1895.

January	10.	Second term of ten weeks begins—Thursday morning.
March	20.	Second term ends—Wednesday night.

Spring Vacation of One Week.

March	28.	Third term of ten weeks begins—Thursday morning.
June	3–4.	Examinations for admission, beginning Monday, at 2 p. m.
June	4.	Annual Examinations close—Tuesday noon.
June	4.	Smyth Prize Reading and Speaking—Tuesday evening.
June	5.	Commencement.

Summer Vacation of Thirteen Weeks.

September	3–4.	Examinations for admission — beginning Tuesday, at 9 a. m.
September	5.	First term of fifteen weeks begins—Thursday morning.
December	18.	First term ends—Wednesday night.

Winter Vacation of Three Weeks.

1896.

January	9.	Second term of ten weeks begins—Thursday morning.
March	19.	Second term ends—Wednesday night.

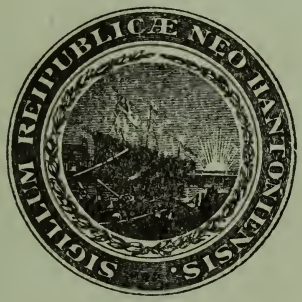
Spring Vacation of One Week.

March	27.	Third term of ten weeks begins—Thursday morning.
June	3–4.	Third term ends.

CATALOGUE

OF THE

New Hampshire College



OF

Agriculture and the Mechanic Arts

1895-'96

THE
JOHN CRERAR
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Athletic Field.

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OF THE

NEW HAMPSHIRE COLLEGE

OF

AGRICULTURE

AND THE

MECHANIC ARTS

1895-1896

DURHAM
NEW HAMPSHIRE COLLEGE
1895

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CATALOGUE

FOUNDATION AND ENDOWMENT

At the session of the legislature of New Hampshire in 1866, an act was passed establishing the "New Hampshire College of Agriculture and the Mechanic Arts" on the basis of the congressional land grant, and authorizing its location in Hanover and connection with Dartmouth college.

In accordance with this act, the institution was organized under a board of trustees, appointed partly by the governor and council and partly by the corporation of Dartmouth college.

The act of congress, by virtue of which it was established, provides that its "leading objects shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts . . . in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

An act of congress, approved August 30, 1890, provides an additional appropriation, which for the current year is twenty-one thousand dollars, and which is to be increased until it becomes twenty-five thousand dollars a year. This money is to be applied "to instruction in Agriculture, the Mechanic Arts, the English Language, and the various branches of Mathematical, Physical, Natural, and Economic Science, with special reference to their applications in the industries of life, and to the facilities for such instruction."

At the session of the legislature of New Hampshire in 1891, acts were passed severing the connection with Dartmouth college and removing the New Hampshire college from Hanover to Durham; accepting the Benjamin Thompson estate, which was then of the value of about four hundred thousand dollars, and, accumulating at four per cent. compound interest, will be available as an endowment in 1910; and providing one hundred

thousand dollars to be used with certain other sums in the erection of buildings.

At the session of the legislature of New Hampshire in 1893, an act was passed appropriating thirty-five thousand dollars for completing and furnishing the buildings. These buildings have been finished, furnished, and supplied with apparatus. The New Hampshire college has completed the second year of work in its new location.

The college is carrying out the provisions of the acts of congress, by giving a practical and scientific education, which is of use in all the professions and industrial pursuits, by means of the following courses of study:

1. Courses in Agriculture:
   - A. Four Years' Course.
   - B. Two Years' Course.
   - C. Ten Weeks' Winter Course.
   - D. Four Weeks' Dairy School.
   - E. Non-resident Course.
2. Courses in the Mechanic Arts:
   - A. Mechanical Engineering Course.
   - B. Electrical Engineering Course.
   - C. Technical Chemistry Course.
3. General Course.

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CHARLES H. PETTEE, A. M., C. E., *Dean, and Professor of Mathematics and Civil Engineering.*

CLARENCE W. SCOTT, A. M., *Professor of History and Political Economy.*

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FLORA S. BEANE, *Instructor in Systematic Botany in the Summer School.*

JOHN N. BROWN, *Foreman of Machine Work.*
ALLEN G. LOWELL, *Foreman of Wood Work.*
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RUEL S. ALDEN, B. S., *Farm Superintendent.*
LEIGH HUNT, B. S., *Assistant Horticulturist.*
RICHARD FITZGERALD, *Actuary.*

STUDENTS

a—Agricultural Course; *c*—Course in Technical Chemistry; *e-e*—Electrical Engineering Course; *g*—General Course; *m-e*—Mechanical Engineering Course. Sophomores and Juniors in the Engineering Courses are designated by *e* only. Freshmen are not classified in courses.

SENIORS

Name.	Residence.	Room.
Barney, Harlan Winifred *a* *	*Grafton.*	Hoitt House.
Hancock, Edward H. *m e* *	*Newton.*	Hoitt House.
Kittredge, Lewis Harris *a*	*Keene.*	Hoitt House.
Wheeler, Delbert Amos *a*	*So. Ashburnham, Mass.*	Prof. Scott's.

JUNIORS

Bartlett, Carrie Augusta *g* *	*Lee.*	Thompson House.
Bartlett, Mary Blaisdell *g* *	*Epping.*	Thompson House.
Bartlett, David Burns *e* *	*Manchester.*	Prof. Scott's.
Buck, Walter French *e*	*Manchester.*	DeMeritt Hall.
Bunker, Mabel Eliza *g* *	*Durham.*	Mr. J. J. Bunker's.
Chamberlin, George Hoitt *e* *	*Durham.*	Mr. Chamberlin's.
Coe, John William *e*	*Newfields.*	Mrs. Mathes's.
Colburn, Arthur Willard *a*	*Dracut, Mass.*	Q. T. V. Hall.
Comings, Carrie Lydia *g*	*Durham.*	Mr. A. L. Comings's.
Comings, Mary Elizabeth *e*	*Durham.*	Mr. A. L. Comings's.
Dennett, Irving Lyford *e*	*Barnstead.*	Mr. Charles Hoitt's.
Forristall, Elwin Henry *a*	*Colebrook.*	Q. T. V. Hall.
Hayes, Leslie David *e*	*Durham.*	Mr. Hayes's.
Hunt, John Norton *e*	*Peterborough.*	Q. T. V. Hall.
Jenkins, Ellery Dunbar *a*	*Lee.*	Mr. E. E. Jenkins's.
Mason, Woodruff *c*	*Durham.*	Prof. Kingsbury's.
Vickery, Charles William *c* *	*Dover.*	36 Summer St., Dover.
Whittemore, Everett Sidney *a*	*Colebrook.*	Q. T. V. Hall.

SOPHOMORES

Butterfield, Richard Cole *a*	*Westmoreland.*	Q. T. V. Hall.
Buzzell, Helen *g*	*Lee.*	Lee.
Chamberlain, Henry Morse *e*	*Marlborough, Mass.*	DeMeritt Hall.
Chase, Frank Rufus *a*	*Epping.*	Thompson Hall.
Clarke, Frank Burnham *a* *	*Enfield.*	Mrs. Davis's.
Corbett, Burton Albert *a*	*Colebrook.*	Q. T. V. Hall.

* Partial course.

Name.	Residence.	Room.
Durgin, Alfred Caverly *e*	*Lee.*	Lee.
Foord, James Alfred *a*	*Walpole.*	Nesmith Hall.
Fullerton, John William *e*	*Somersworth.*	Q. T. V. Hall.
Given, Arthur *c*	*Wolfeboro.*	DeMeritt Hall.
Haley, John Myron *a* *	*Dover.*	123 Portland St., Dover.
Hayes, Mabel Lucy *g*	*Durham.*	Mr. Hayes's.
Mathes, Harry Clinton *a* *	*Durham.*	Q. T. V. Hall.
Moore, Herbert Fisher *e*	*Penacook.*	Q. T. V. Hall.
Morgan, Gerry Austin *e*	*Goffstown.*	DeMeritt Hall.
Richardson, Harry Putnam *a*	*Milford.*	DeMeritt Hall.
Sanborn, Fred Dexter *e*	*Ashland.*	Q. T. V. Hall.
Shaw, Elijah Ray *a*	*Nashua.*	Hoitt House.
Shaw, Roscoe Hart *c*	*Milton.*	Q. T. V. Hall.
Smith, Fred Webster *a*	*Franklin Falls.*	Mr. Charles Hoitt's.
Snell, Edna Bernice *g* *	*Lee.*	Lee.
Straw, Edson Albert *e*	*Pittsfield.*	Nesmith Hall.
Tolles, Benjamin D. *e*	*Somersworth.*	Q. T. V. Hall.
Young, Rena Etta *g* *	*Newmarket.*	Mr. Sawyer's.

FRESHMEN

Andrews, Herbert Prescott	*Hollis.*	Thompson Hall.
Ash, John William	*Manchester.*	Hoitt House.
Baker, Frank Loren	*So. Yarmouth, Mass.*	Pres. Murkland.
Baker, Henry Clark	*So. Yarmouth, Mass.*	Mr. Weeden's.
Barnard, Harry Everett	*Nashua.*	Hoitt House.
Black, James Stanislaus	*Nashua.*	DeMerritt Hall.
Caverno, Bernice Elizabeth	*Durham.*	Mr. Caverno's.
Churchill, Arthur Leslie	*Deerfield.*	Mr. Weeden's.
Clement, Harrison Edward	*Nashua.*	Hoitt House.
Cobb, Walter Knight	*Westmoreland.*	Q. T. V. Hall.
Colby, Irving Atwell	*Exeter.*	Mr. Hayes's.
Demeritt, Edith Augusta	*Durham.*	Mr. Demeritt's.
Demeritt, George Stickney	*Dover.*	84 Locust St., Dover.
Foss, Edna Ethel	*Durham.*	Mr. Foss's.
Gordon, Arthur Gilbert	*Reeds Ferry.*	Mr. C. Hoitt's.
Hayden, Willis Daniel Farley	*Hollis.*	DeMeritt Hall.
Hayes, Clarence Morrill	*Milton.*	Q. T. V. Hall.
Hayes, Fred Frost	*Portsmouth.*	DeMerritt Hall.
Hunt, William Elmer	*Nashua.*	Hoitt House.
Jenkins, Evelyn	*Lee.*	Lee.
Ladd, Samuel Tilton	*Epping.*	Mr. C. Hoitt's.
Langlier, Joseph Alphonse	*Nashua.*	DeMeritt Hall.
Locke, Eben	*Madbury.*	DeMeritt Hall.
Loring, Walter Benjamin	*Milford.*	Prof. Scott's.

*Partial Course.

Name.	Residence.	Room.
Muzzey, Harry Walter	*Tilton.*	Q. T. V. Hall.
Nesbit, Joseph Newton Gray	*Milton, Penn.*	DeMeritt Hall.
Norcross, Arthur Zebulon	*Rindge.*	Prof. Scott's.
Philbrick, John	*Seabrook.*	DeMeritt Hall.
Putney, Harry Nelson	*Franklin.*	Mrs. Mathes's.
Roberts, John Harry	*Rollinsford.*	Rollinsford.
Simpson, Etta Lillian	*Durham.*	Mr. Simpson's.
Taft, Deforest Reed	*Winchester.*	DeMeritt Hall.
Wilson, John Ernest	*Hollis.*	DeMeritt Hall.

GRADUATE STUDENTS

Name.	Residence.	Subjects.
Beard, Ithamar Mansur, A. B.	*Dover.*	Entomology, Horticulture, Painting.
Hill, Henry Elmer, B. S.,	*Durham.*	Mathematics, Physics, Mechanics.

SPECIAL STUDENTS

Moulton, Martha C.	*Exeter.*	Biology.
Smith, Jennie S.	*Newmarket.*	Biology.

TWO YEARS' COURSE IN AGRICULTURE

Name.	Residence.	Room.
Burnham, Fanny	*Durham.*	Mr. Burnham's.
Foye, Blanche Mary	*Durham.*	Prof. Weed's.
Nelson, Harry W.	*Franklin Falls.*	Mr. W. M. Jenkins's.
Pettee, Alvena Belle	*Durham.*	Prof. Pettee's.
Runlett, Harold Morrison	*Durham.*	Mr. Runlett's.
Stratton, Lyman Charles	*Hollis.*	Hoitt House.
Wiggin, Walter Millett †	*Durham.*	Mr. Wiggin's.

INSTITUTE COURSE AND DAIRY SCHOOL

Name.	Residence.
Church, Bert Charles	*Etna, New Hampshire.*
Hill, D. Herbert	*Lee, New Hampshire.*
Mousley, Orton M.	*Lyman, New Hampshire.*
Swallow, A. G.	*Exeter, New Hampshire.*

SUMMER SCHOOL OF BIOLOGY

Andrew, B. S.	*Manchester, New Hampshire.*
Beane, Flora S.	*Littleton, New Hampshire.*

† Deceased.

Name.	Residence.
Berry, Idella R.	*Dover, New Hampshire.*
Borden, Inez E.	*New York, New York.*
Call, Aubrey B.	*Peterborough, New Hampshire.*
Caswell, Charles V.	*Portland, Maine.*
Coleman, Lydia S.	*Newington, New Hampshire.*
Fitzgerald, Richard	*Durham, New Hampshire.*
Folsom, Mabel A.	*Charleston, New Hampshire.*
Hodges, Henry C., Jr.	*Durham, New Hampshire.*
Hubbard, Ola A.	*Walpole, New Hampshire.*
Mathes, Fanny P.	*Dover, New Hampshire.*
McClure, Viola E.	*Plymouth, New Hampshire.*
Pease, F. H.	*Dover, New Hampshire.*
Randall, Elizabeth E.	*Marlborough, New Hampshire.*
Read, Susan R.	*New Bedford, Massachusetts.*
Smith, Jennie S.	*Newmarket, New Hampshire.*
Weed, Marian	*Grand Rapids, Michigan.*
Wiggin, Elizabeth	*Newark, New Jersey.*

NON-RESIDENT COURSE IN AGRICULTURE

Adams, Charles L.	*East Providence, Rhode Island.*
Ballinger, Ellis G.	*East View, Virginia.*
Bridges, W. A.	*Foxcroft, Maine.*
Cass, C. O.	*Hampstead, New Hampshire.*
Crane, John J.	*North Weare, New Hampshire.*
Cable, D. J.	*Lima, Ohio.*
Chamberlin, S. M.	*Woodsville, New Hampshire.*
Costen, S. J.	*Cheapside, Virginia.*
Crosby, D. L.	*Peterborough, New Hampshire.*
Cunningham, T. J.	*Hampton, Virginia.*
Dunham, G. Burton	*Boston, Massachusetts.*
Fay, David E.	*South Deerfield, Massachusetts.*
Fernald, William L.	*Eliot, Me.*
Gardner, James P., Jr.	*Brooklyn, New York.*
Gilpatric, Winifred W.	*Bridgewater, New Hampshire.*
Guthrie, Samuel J.	*St. Louis, Missouri.*
Herwig, George W.	*Mason City, Illinois.*
Hammar, J. F.	*Nashua, New Hampshire.*
Hill, D. H.	*South Lee, New Hampshire.*
Jamieson, William	*St. Louis, Missouri.*
Killough, Harry	*Richmond, Kansas.*
Kelly, J. J.	*Brandonville, West Virginia.*
Lockridge, Albert O.	*Greencastle, Indiana.*
Morse, Elisha W.	*New Boston, New Hampshire.*
Mayer, George C.	*Elizabethtown, Pennsylvania.*
Munroe, Albert F.	*East Providence, Rhode Island.*

Name.	Residence.
Nichols, Andrew, Jr.	*Bridgewater, New Hampshire.*
Osborne, Alfred	*North Weare, New Hampshire.*
Purinton, A. A.	*Nashua, New Hampshire.*
Reese, Samuel G.	*Elizabethtown, Pennsylvania.*
McClure, C. B.	*Munsonville, New Hampshire.*
McClure, Susie A.	*Munsonville, New Hampshire.*
Rengermann, William	*East Granby, Connecticut.*
Robb, George	*Tonganoxee, Kansas.*
Sleeper, Catherine	*Wonalancet, New Hampshire.*
Snodgrass, James	*Sulphur Springs, Missouri.*
Sanford, George F.	*Winchester, New Hampshire.*
Upham, Walter J.	*Weston, Massachusetts.*
Whaley, E. M.	*Courtenay, Florida.*
Wilder, Daniel	*Surry, New Hampshire.*
Wilder, Sidney J.	*Surry, New Hampshire.*

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ADMISSION

Candidates for the first year must present testimonials of good moral character, and must pass an examination in the following subjects:

a. Arithmetic, including the metric system.
b. Algebra, to quadratics.
c. Plane Geometry.
d. Physical Geography.
e. American History.
f. English.

It is recommended that the preparation also include Myers's General History or an equivalent.

In English the examination will consist in the criticism of specimens of incorrect English, together with a short essay, correct in spelling, punctuation, division into paragraphs, grammar and expression, on a subject to be announced at the time of the examination. In 1896 the subject will be taken from one of the following books: Shakespeare's Merchant of Venice and Midsummer Night's Dream; Milton's L'Allegro, Il Penseroso, Comus and Lycidas; Longfellow's Evangeline; Macaulay's Essay on Milton; Webster's First Bunker Hill Oration; DeFoe's History of the Plague in London; Irving's Tales of a Traveler; Scott's Woodstock; George Eliot's Silas Marner.

In 1897, Shakespeare's Merchant of Venice, and As You Like It; Scott's Marmion; Longfellow's Evangeline; Burke's Speech on Conciliation With America; Macaulay's Life of Samuel Johnson; DeFoe's History of the Plague in London; Irving's Tales of a Traveler; Hawthorne's Twice-Told Tales; George Eliot's Silas Marner.

In 1898 Shakespeare's Merchant of Venice, and Julius Cæsar; Goldsmith's Deserted Village; Scott's Marmion; Longfellow's Courtship of Miles Standish; Burke's Speech on Conciliation With America; Macaulay's Life of Samuel Johnson; DeFoe's

Thompson Hall.

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History of the Plague in London; Hawthorne's Twice-Told Tales; Thackeray's Newcomes; George Eliot's Silas Marner.

Students are advised to prepare themselves thoroughly in all the required subjects, and especially in English, since no college can be expected to admit students who cannot write their own language with neatness, clearness, and an approach to accuracy.

They are further recommended not to limit their preparation to these requirements. The excellent academies and high schools of New Hampshire put within their reach a preliminary training which will add greatly to the value of a college course.

Candidates for advanced standing are also examined in the studies that have been pursued by the class which they propose to enter.

A certificate from any academy or high school will be accepted in place of an examination, upon any subject required for admission to the first year. Every certificate must state the amount of work done by the student, his proficiency, and the text-books used; and in case it is not evident that the student is thoroughly prepared, an examination will be required.

Certificate forms will be furnished on application.

The times for examination are the Monday afternoon and Tuesday before Commencement, and the Tuesday and Wednesday before the beginning of the first term. Candidates will first present themselves with their credentials on the first day of the examination. See Calendar.

DESCRIPTION OF STUDIES

For the Courses of Study see page 31 et seq.

AGRICULTURE AND HORTICULTURE.

1. Chemistry of Plant Growth. *Thirty exercises.*

The composition of plants at different stages of growth, and the conditions necessary for their development.

2. Pomology and Viticulture. (Fruit growing.) *Twenty exercises.*

References: Downing's Fruit and Fruit Trees of America; Thomas's American Fruit Culturist; Warden's Pomology; Barry's Fruit Garden; Fuller's Small Fruit Culturist, etc.

3. Food and Nutrition. *Twenty exercises.*

These subjects include the composition of foods and the animal body; the assimilation of the former by the latter, and the principles underlying a rational diet.

4. Stock Feeding. *Ten exercises.*

This course is taken simultaneously with Course 3, by the students in agriculture. It deals with the practical application of the principles of nutrition to the feeding of domestic animals, and consists of ten lectures, and forty hours practical work.

5. Arboriculture and Forestry. *Ten exercises.*

The use of trees for shelter, shade, and ornament; and their propagation. Values of trees for timber; how to improve existing woodlands; influence of forests upon soils, crops, and climate; establishment and management of plantations of forest trees, etc.

6. Floriculture and Landscape Gardening. *Twenty exercises.*

Lectures and recitations. References: Henderson's Practical Floriculture; Long's Ornamental Gardening; Downing's Landscape Gardening; and various special works and special pamphlets.

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GARDEN.

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7. Soils and Fertilizers. *Thirty exercises.*

The course deals with the relations of soils and fertilizers to each other and to plants.

8. Olericulture and Seed Growing. (Vegetable Gardening.) *Twenty exercises.*

Lectures and recitations. References: Henderson's Gardening for Profit; Brill's Seed Growing; and various special works.

9. Comparative Anatomy of Domestic Animals. *Thirty exercises.*

Lectures and recitations.

10. Dairying. *Twenty exercises.*

Winter term; Senior year, beginning on the first Monday in February, and continuing for four consecutive weeks. This course consists of a thorough-going practical and theoretical course of instruction in methods of modern dairying, including the general management of the dairy, the methods of milk analysis, the bacteriology of the dairy, the use of separators; the making of butter, and preparation of milk for the city market.

11. Domestic Animals. (Breeds and Breeding.) *Twenty exercises.*

Lectures and recitations. References: Mile's "Stock Breeding," and Curtis's "Horses, Cattle,Sheep, and Swine," etc.

12. Dairy Chemistry. *Fifteen exercises.*

This course consists of lectures and recitations upon the chemistry of milk, butter, and cheese.

13. Discussion of Experiment Station Bulletins.
a. *Fifteen exercises.* b. *Ten exercises.* c. *Ten exercises.*

14. Practical work.

During the last two years of the course ten hours per week is required in practical work, either on the farm or in the garden and nursery during the fall and spring; and in the barn, greenhouse, carpenter shop, or machine shop during the winter. The object of this work is to familiarize the student with the application of a theoretical training. During the last or senior year most of this time can be taken up for thesis work in which some original investigation is carried on, the results being presented for the graduating thesis which may be published, if of sufficient interest.

BOTANY

1. Introductory Botany. *Fifty exercises.*

A general introduction to the study of plants by means of laboratory work and lectures, beginning with the lower forms.

2. Structural Botany. *Thirty-five exercises.*

Lectures and laboratory work on the minute structure and physiology of plants, with special reference to the higher forms.
Open only to those who have taken Course 1.

3. Plant Diseases. *Thirty exercises.*

A study by means of lectures and laboratory work of some of the more important fungous diseases of cultivated plants and the means of preventing their injuries.
Open only to students who have completed Botany 1 and 2.

CHEMISTRY

1. Inorganic Chemistry. *Forty-five exercises.*

Lectures and recitations on general theoretical chemistry, illustrated by experiments, charts, specimens, lantern views, etc. Solutions of chemical problems will be required.

2. Inorganic Chemistry. *Thirty exercises.*

Course 2 is a continuation of Course 1, but the time will be spent mainly on the metallic elements, their metallurgy, salts, etc.
Open only to students who have passed in Course 1.

3. Organic Chemistry. *Twenty exercises.*

Course 3 will consist of lectures and recitations on the chemistry of the carbon compounds, together with the study of their properties by means of laboratory practice.
Open only to students who have passed in Course 1.

4. Organic Chemistry. *Twenty exercises.*

Course 4 is a continuation of Course 3, and must be preceded by it.

5. Qualitative Chemical Analysis.

Course 5 consists of laboratory practice with occasional lectures. The student is expected to become proficient in the separation and detection of the common acids and bases, and to keep a full set of notes.

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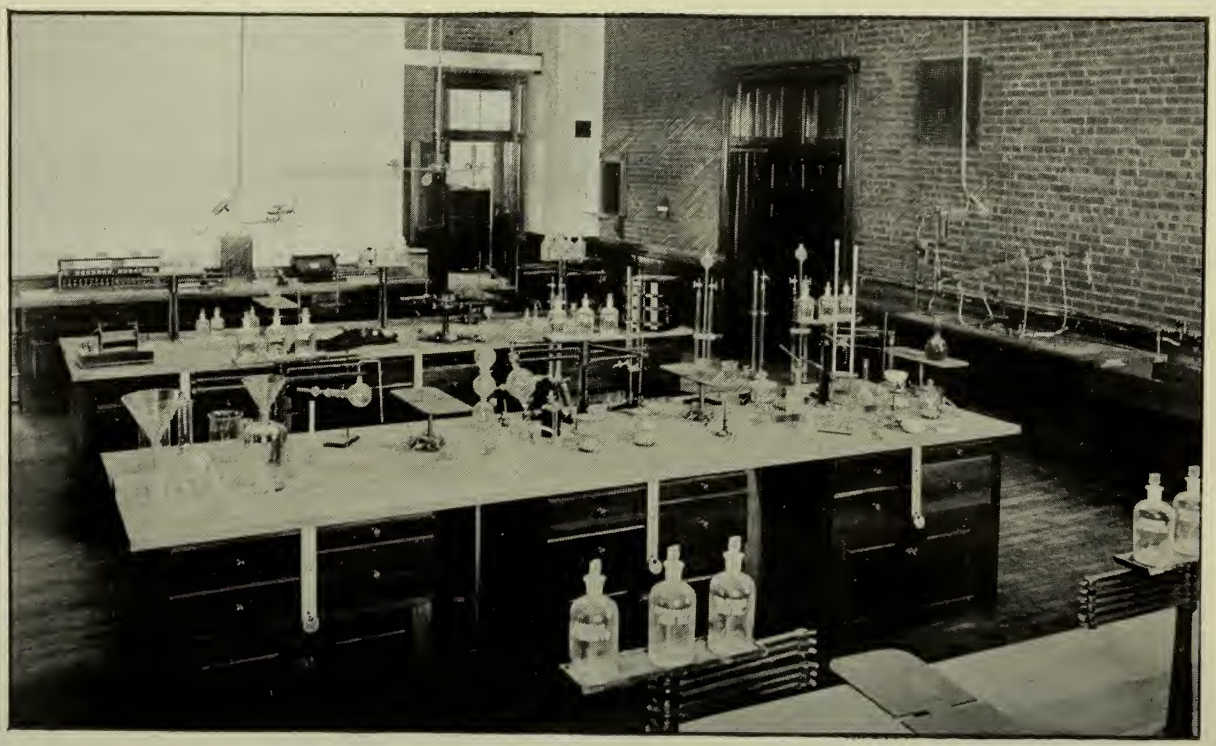

Quantitative Chemical Laboratory.

Floricultural Grounds.

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He will have practice in the writing of reactions and will fill out numerous slips containing questions bearing upon his work.

Open only to students who have completed Courses 1 and 2.

6. Qualitative Analysis completed and Quantitative Analysis begun. *Course extends through two terms.*

The work in quantitative analysis will be, in the main, elementary and preparatory for advanced work.

Open to those who have completed Course 5.

7. Applied or Industrial Chemistry.

a. *Twenty exercises.* b. *Twenty exercises.*

Course 7 consists of lectures on chemical manufactures, such as iron, steel, sugar, salt, sodium carbonate, fertilizers, sulphuric acid, glass, matches, paints, dyes, soaps, illuminating gas, petroleum, etc. The lectures will be illustrated by lantern views; and trips to the leading New England cities, to examine important chemical manufactures, will be taken as far as practicable.

Open only to those who have completed Courses 1, 2, 3, and 4.

8. Advanced Quantitative Analysis.

Course 8 extends through the year and is intended to fit the student for work in the laboratories of agricultural experiment stations, fertilizer works, iron works, sugar refineries, etc.; and for the duties of the public analyst. The course will be made to fit the end which each has in view, and will be largely an individual one. For those students in the Chemical Division of the Agricultural Course the analyses made will tend in the main toward agricultural products, fertilizers, mucks, marls, manures, dairy products, waters, food stuffs, sugars, etc. For the student wishing to enter metallurgical works the analyses will be in the main upon iron, steel, and other metals, ores, limestone, slags, alloys, fuels, etc. As a preparation to the study of medicine, work will be done on poisons, foods, drugs, urine, etc. Other lines will be arranged to meet the wants of the individual student. Each student will be given some practice in all of the branches of agricultural, metallurgical, medical, sanitary, and industrial chemistry, in order to lay a foundation for any future work which may be required of him. A short course in gas analysis will also be provided. A portion of the time of the last two terms is given to work bearing upon the preparation of a graduating thesis.

Open to students who have completed Course 6.

9. Organic Chemistry. *Thirty exercises.*

Course 9, for students in the Chemical Division of the Agricultural Course, and in the Technical Chemistry Course, consists of laboratory

practice by the students in preparing and purifying products relating to their respective lines of work.

Open to those who have taken Courses 3 and 4.

10. Chemical Journals, Methods, etc. *Thirty-five exercises.*

The work consists of the study of current chemical literature, which is mainly in the German language, with recitations once a week throughout the year. Each student will be expected to prepare abstracts, reports, criticisms, etc., upon assigned articles.

Open to students taking Course 8.

11. Chemical Philosophy. Lectures and Recitations.

a. Twenty exercises. *b. Twenty exercises.*

The work consists of advanced study of chemical theory. Practical experiments will be performed, with the aid of the student, in the determination of vapor density, molecular weights, specific heat, etc.; and the study of isomorphism, diffusion of gases, solutions, molecular and atomic volume, etc., will take up much of the time.

Course 11 comes in alternate years with Course 7, and is open to students who have completed Courses 1, 2, 3, and 4.

DRAWING

Two and one half hours' work is reckoned as one exercise.

1. Freehand Drawing.

a. Thirty exercises. *b. Twenty exercises.*

The course includes outline drawing from models and from groups of common objects, light and shade drawing from models and from casts of historic ornament; the principles of perspective; elementary design; machine sketching and the use of instruments.

2. Advanced Freehand Drawing.

a. Thirty exercises. *b. Twenty exercises.*

This course includes drawing from the cast and from still life with charcoal and stump; pencil sketching; the use of water color; design.

3. Descriptive Geometry and Drawing.

a. Fifty exercises. *b. Thirty exercises.*

Recitations and drawing exercises in the solution of problems in plane and solid geometry by means of orthographic projections.

Course 3 is open only to those who have taken Mathematics 2.

4. Mechanical Drawing.

a. Twenty exercises.

Recitations on shades and shadows and perspective, with exercises in perspective drawing and line shading.

b. Thirty exercises.

Exercises in making dimension drawings for the use of workmen; tracing and blue-printing.

ENGINEERING

1. Surveying. *Fifty exercises.*

Recitations, field work, and plotting, including compass, transit, plane-table, and level work.

2. Mechanism. *Seventy-five exercises.*

Recitations, and exercises in drawing outlines of elementary combinations of parts of machines, with special reference to the relative motions of the parts, their forms and modes of connection.

Conrse 2 is open only to those who have taken Drawing 3.

3. Mechanics of Engineering.

a. Fifty exercises. *b. Fifty exercises.*

Course 3 a and the first half of Course 3 b are devoted to recitations in Statics and Dynamics, the latter half of Course 3 b to Mechanics of Materials.

Course 3 is open only to those who have taken Course 2 and Mathematics 6.

4. Materials of Construction. *Sixty exercises.*

Recitations on the production, properties, uses, and preservation of engineering materials.

Course 4 is open only to those who have taken Course 3 b and Chemistry 2.

5. Thermodynamics.

a. Forty-five exercises. *b. Thirty exercises.*

Course 5 is open only to those who have taken Course 3 a and Physics 1.

6. Heat Motors and Refrigerating Machinery.

Thirty exercises.

Course 6 is open only to those who have taken Course 5.

7. Construction and Theory of Dynamos and Electro-motors. *Forty-five exercises.*

Lectures and quizzes.

Course 7 is open only to those who have taken Physics 4 to 6 and Mathematics 5 and 6.

8. Work in Mechanical Laboratory.

a. and *b.* Tests of Materials.

a. Thirty exercises. *b. Thirty exercises.*

c. Tests of Boilers and Engines. *Twenty exercises.*

Courses 8 a and 8 b are open only to those who have taken Course 3 b. Course 8 c is open only to those who have taken Course 5.

9. Machine Design. *Forty exercises.*

Course 9 is open only to those who have taken Courses 3 and 4.

10. Applications of Electricity.

a. Forty exercises. *b. Thirty exercises.*

Lectures and recitations.

Course 10 is open only to those who have taken Physics 1, 2, and 3.

11. Roads, Streets, and Pavements. *Twenty exercises.*

Recitations and lectures on construction and maintenance of paved, macadamized, and gravel roads, with discussion of laws relating thereto.

ENGLISH

1. Rhetoric.

a. Thirty exercises. *b. Twenty Exercises.* *c. Twenty exercises.*

2. Three Themes. *One each term.*

3. Three Original Declamations. *One each term.*

4. Three Original Declamations. *One each term.*

5. Early English. *Forty-five exercises.*

Study of authors.

6. Elizabethan Writers. *Thirty exercises.*

Study of authors.

7. Writers of the Restoration and the French Influence. *Thirty exercises.*

8. Victorian Writers. *Twenty exercises.*

9. English Romance. *Thirty exercises.*

10. American Literature. *Thirty or fifty exercises.*

Lectures and study of authors.

11. Study of Words. *Thirty exercises.*

12. Advanced Rhetoric. *Twenty exercises.*

FRENCH

1. French Grammar. *Forty-five exercises.*

Pronunciation; dictation; oral drill; translation.

2. French Reader. *Thirty exercises.*

Easy selections from French authors; irregular verbs.

3. Readings from French History. *Thirty exercises.*

Study of the more common and essential points of French syntax.

4. Writers of the Nineteenth Century. *Forty-five exercises.*

Feuillet, Mérimée, About; special attention to French idioms.

5. The Modern Drama. *Thirty exercises.*

Scribe, Victor Hugo, Sandeau; the text will be made the basis of exercises in conversation.

6. French Prose of Popular Science. *Thirty exercises.*

The aim is to increase the student's vocabulary of practical, if not strictly scientific, subjects.

GEOLOGY

1. Elementary Geology. *Thirty exercises.*

2. Mineralogy. *Thirty exercises.*

A short course in blowpipe analysis, followed by laboratory practice in the determination and study of minerals, with special reference to their economic value.

Course 2 is open only to students who have taken Chemistry 1 and 2.

GERMAN

1. German Grammar. *Forty-five exercises.*

Declension of nouns and adjectives; regular and irregular verbs; oral drill; written exercises.

2. Readings for Beginners. *Thirty exercises.*

Carefully graded selections of such a character as to gradually meet and master the difficulties of German syntax.

3. Contemporary Writers. *Thirty exercises.*

Variety of vocabulary, and the mastery of the more common idioms, will be the aim of this Course.

4. German Plays. *Forty-five exercises.*

The selections chosen will be made the basis of colloquial drill.

5. Masterpieces of German Literature. *Thirty exercises.*

Goethe, Schiller, Lessing.

6. Scientific German. *Thirty exercises.*

The purpose of the Course is to familiarize the student with the vocabulary of scientific investigation.

HISTORY

In the work in history special attention is paid to the development of those arts and institutions which have had the most important influence upon later history.

In the advanced courses considerable time is given to historical reading and to written work.

1. Grecian History. *Forty-five exercises.*

2. Roman History. *Thirty exercises.*

3. Mediæval History. *Thirty exercises.*

4. Modern History to the French Revolution. *Forty-five exercises.*

5. European Political History since the beginning of the French Revolution. *Thirty exercises.*

6. American History to 1789. *Thirty exercises.*

7. American Political History since 1789. *Forty-five exercises.*

MATHEMATICS

1. Higher Algebra. *Sixty-five exercises.*

2. Solid Geometry, with advanced course. *Fifty-five exercises.*

3. Plane and Spherical Trigonometry. *Sixty exercises.*

4. Analytic Geometry. *Seventy-five exercises.*

5 *a*. Differential Calculus.
5 *b*. Integral Calculus. } *One hundred exercises.*

6. Astronomy. *Thirty exercises.*

METEOROLOGY

1. Meteorology. *Twenty exercises.*

Recitations and lectures on wind systems, precipitation, humidity, laws of storms and tornadoes, and methods of prediction of atmospheric changes.

MILITARY SCIENCE AND TACTICS

1. Military Drill.

Practical instruction in drill and gymnastic exercises.
Four exercises per week throughout the Freshman, Sophomore, and Junior years; elective in the Senior year.

2. Military Tactics.

Theoretical instruction in drill regulations and the elementary principles of military science.
One exercise per week throughout the Freshman, Sophomore, and Junior years.

PHILOSOPHY

1. Logic. *Thirty exercises.*

Lectures and recitations.

2. Psychology. *Forty-five exercises.*

3. Ethics. *Thirty exercises.*

Lectures and recitations.

PHYSICS

1 *a*. Mechanics, } *Forty-five exercises.*
1 *b*. Heat, }

2 *a*. Light, } *Thirty exercises.*
2 *b*. Sound, }

3. Electricity and Magnetism. *Thirty exercises.*

Courses 1, 2, and 3 are a general introduction to the subject. The instruction is given by recitations and lectures, the latter being illustrated by experiments and stereopticon. Notes on lectures and experiments are submitted by each student.

4. Laboratory Work in Mechanics and Heat.
Forty-five exercises.

5. Laboratory Work in Heat and Light. *Thirty exercises.*

6. Laboratory Work in Electricity and Magnetism.
Thirty exercises.

The work consists in the experimental verification of the laws of physics and the determination of physical constants; for example, the student will by experiments investigate the intensity of gravity, coefficients of friction, the analytical balance, elasticity of wires, specific heats, laws of radiation and absorption of heat, candle power of lights, dip, declination, and intensity of the earth's magnetism, laws of electric currents, of electro-magnets, etc. A systematic and carefully written report on each experiment is required.

Courses 4, 5, and 6 are taken consecutively and are open only to those who have passed in Courses 1, 2, and 3. Students in Engineering must also have passed in Mathematics 1 to 6.

7. Electrical and Photometrical Measurements.
a. Fifteen exercises. *b. Fifteen exercises.*

The work consists in the measurement by various methods of current, resistances, and E. M. F., and in photometric study of arc and incandescent lamps.

Course 7 is open only to those who have passed in Courses 4, 5, and 6.

8. Experimental work on the efficiency, characteristic curves, and curves of potential of dynamos and motors.
Twenty exercises.

Course 8 is open only to those who have passed in Physics 7 and Engineering 7.

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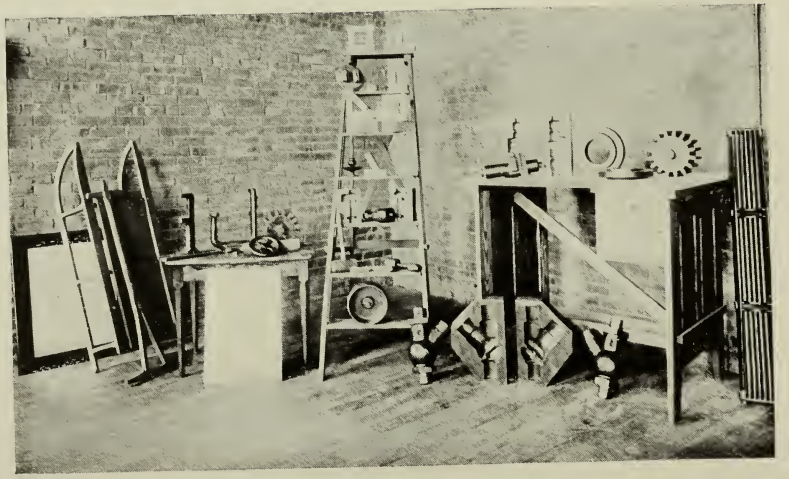
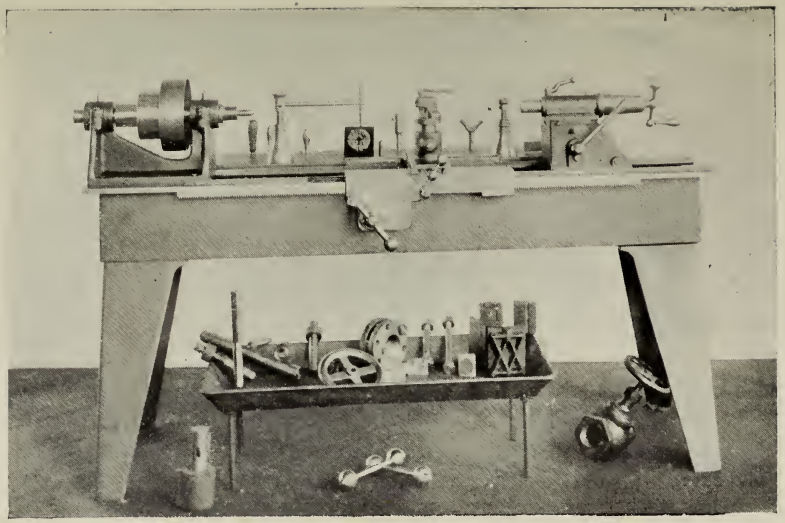


Students' Exercises—Wood Work.



Students' Exercises—Iron Work.

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POLITICAL SCIENCE

1. Political Economy. *Fifty exercises.*

A course in Walker's Political Economy, with lectures upon some of the practical questions of the day.

2. Laws of Business. *Thirty-three exercises.*

Recitations supplemented by lectures and the discussion of cases.

3. American Constitutional Law. *Forty-two exercises.*

Use is made of Pomeroy's Constitutional Law, which is brought up to date by means of the decisions of the United States Supreme Court. Special attention is given to the connection between American constitutions and American political history.

4. Advanced Political Economy. *Thirty exercises.*

A consideration of such subjects as banking, bimetallism, and tariff legislation.

Open only to those who have taken Course 1.

5. Advanced Political Economy, or Social Science. *Thirty exercises.*

Open only to those who have taken Courses 1 and 4.

SHOP WORK

Three hours' work in the shops is reckoned as one exercise.

1. Work in Wood Shop.

Exercises in carpentry, joinery, and pattern making.

a. Forty-five exercises.	*b. Thirty exercises.*
c. Thirty exercises.	*d. Forty-five exercises.*
e. Thirty exercises.	*f. Thirty exercises.*

2. Work in Machine Shop.

Exercises in bench work, machine work, and shop measurements.

a. Thirty exercises.	*b. Twenty exercises.*
c. Twenty exercises.	*d. Forty-five exercises.*
e. Thirty exercises.	*f. Thirty exercises.*

ZOÖLOGY

1. Introductory Zoölogy. *Forty exercises.*

A general introduction to the study of animal life, by means of lectures and laboratory dissections of the principal types.

2. Animal Biology. *Twenty exercises.*

A general study of the nature and processes of animal life, with especial attention to heredity, varíation, development, and mental powers.

Open to students who have taken Course 1.

3. Entomology. *Thirty exercises.*

A review of the classification, structural characters, and biological relations of insects, with a special study of those injurious to cultivated crops and domestic animals, and of the means of preventing their injuries.

Open only to those who have taken Courses 1 and 2.

4. Economic Ornithology. *Fifteen exercises.*

Lectures on the relations of birds to agriculture, and their relations to each other and to other organisms.

Courses 4 a and 4 b are open only to students who have taken Courses 1, 2, and 3.

5. Advanced Zoölogy.

Averaging four exercises a week for a year.

Course 5 is intended for those students who elect Zoölogy for their Senior year. It will usually be modified to suit individual needs. Open only to those who have completed all preceding Courses.

6. Zoölogical Bibliography. *One hour a week for a year.*

Open only to students taking Course 5.

7. Biological Literature. *Thirty exercises.*

COURSES OF STUDY

AND SCHEDULE OF HOURS

For Details see Description of Studies.

Chapel exercises: 11 : 45 daily, except that on Sundays the exercises are held at 5 p. m. Attendance is required of all students.

Military Drill: Military Science 1. M., T., Th., F., 12 to 12 : 30. Attendance is required of all students in the four-year courses, exceept in the Senior year, in which the drill is elective.

Rhetoricals: Wednesdays, 12 to 12 : 30.

FRESHMAN YEAR

For all Four-Year Courses.

FIRST TERM.

		Exercises per week.
Rhetoric—English 1 a	Div. I. M. W. 9 Div. II. W. F. 8	2
Algebra and Geometry—Mathematics 1 and 2	Div. I. M. T. W. Th. F. S. 11 Div. II. M. T. W. Th. F. 3. S. 10	6
*Shopwork—Shopwork 1 a	Div. I. M. T. W. 1:30 to 4 Div. II. M. W. 9 to 11:45. T. 10 to 11:45	3
Freehand Drawing—Drawing 1 a	Div. I. Th. F. 1:30 to 4. Div. II. Th. 10 to 11:45. F. 9 to 11:45	2
Grecian History—History 1.	T. Th. S. 9	3
or *French—French 1.	T. Th. S. 8	
Military Tactics—Military Science 2	Div. 1. F. 10 Div. II. F. 2	

SECOND TERM.

Rhetoric—English 1 b	Div. I. M. W. 9 Div. II. W. F. 8	2
Geometry—Mathematics 2	Div. I. M. T. W. Th. F. S. 11 Div. II. M. T. W. Th. F. 3. S. 10	6
*Shopwork—Shopwork 1 b	Div. I. M. T. W. 1:30 to 4. Div. II. M. W. 9 to 11:45. T. 10 to 11:45	3
Freehand Drawing—Drawing 1 b	Div. I. Th. F. 1:30 to 4. Div. II. Th. 10 to 11:45. F. 9 to 11:45	2
Roman History—History 2	T. Th. S. 9.	3
or *French—French 2	T. Th. S. 8.	
Military Tactics—Military Science 2	Div. 1. M. 10 Div. II. M. 2	

THIRD TERM.

Rhetoric—English 1 c	Div. I. W. F. 9 Div. II. W. F. 8	2
Geometry and Trigonometry—Mathematics 1 and 3	Div. I. M. T. W. Th. F. S. 11 Div. II. M. T. W. Th. F. S. 10	6
†Descriptive Geometry—Drawing 3 a or †Botany—Botany 1	M. T. W. Th. F. 1:30 to 4.	5
Mediæval History—History 3	T. Th. S. 9	3
or *French—French 3	T. Th. S. 8	
Military Tactics—Military Science 2	Div. I. T. 10 Div. II. T. 11	

*French is taken by women in place of shop work.

†Descriptive Geometry is taken by students intending to complete either of the Engineering Courses; Botany is taken by all other students.

COURSE IN AGRICULTURE.

Sophomore Year.

FIRST TERM.

		Exercises per week.
Structural Botany—Botany 2 Introductory Zoölogy—Zoölogy 1	T. W. Th. F. 1:30 to 4	4
Early English—English 5,	M. 3. W. F. 8.	3
French—French 4. T. Th. S. 9 or Modern History—History 4. T. Th. S. 8		3
Inorganic Chemistry—Chemistry 1.	M. W. F. 10	3
Mechanics and Heat—Physics 1.	T. Th. S. 10	3
Military Tactics—Military Science 2.	Th. 11.	
One Theme—English 2.		

SECOND TERM.

Animal Biology—Zoölogy 1.	W. F. 1:30 to 4	2
English—English 6.	M. 3. W. F. 8	3
French—French 5. T. Th. S. 9 or Modern History—History 5. T. Th. S. 11		3
Inorganic Chemistry—Chemistry 2.	M. W. F. 10	3
Organic Chemistry—Chemistry 3.	T. Th. 1:30 to 4	2
Sound and Light—Physics 2.	T. Th. S. 10	3
Military Tactics—Military Science 2.	Th. 11.	
One Theme—English 2.		

THIRD TERM.

Entomology—Zoölogy 3.	M. W. F. 9 to 11	3
French—French 6. T. Th. S. 9 or American History—History 6. T. Th. S. 8		3
Surveying—Engineering 1.	M. T. W. Th. F. 1:30 to 4	5
Organic Chemistry—Chemistry 4.	W. F. 11	2
Electricity and Magnetism—Physics 3.	T. Th. S. 10	3
Military Tactics—Military Science 2.	M. 11.	
One Theme—English 2.		

Junior Year.

FIRST TERM.

	Exercises per week.
Pomology—Agriculture 1. W. F. 11	2
Chemistry of Plant Growth—Agriculture 2. T. Th. 8	2
Plant Diseases—Botany 3. T. Th. 9 to 11	2
Economic Ornithology—Zoölogy 4. S. 8	1
German—German 1. T. Th. S. 11 or American Political History—History 7. M. W. F. 10	3
Chemical Laboratory—Chemistry 5. M. T. W. 1: 30 to 4	3

Farm Work—Agriculture 14. Ten hours per week.
Military Tactics—Military Science 2. M. 11.
One original Declamation. English 3.

SECOND TERM.

Foods and Nutrition—Agriculture 3. T. Th. 9.	2
Stock Feeding—Agriculture 4. W. 8	1
Forestry—Agriculture 5. F. 8	1
Geology—Geology 1. T. Th. S. 8	3
German—German 2. T. Th. S. 11 or American Literature—English 10. M. W. F. 11	3
Chemical Laboratory—Chemistry 6. M. T. W. 1: 30 to 4	3

Farm Work and Shop Work—Agriculture 14. Ten hours per week.
Military Tactics—Military Science 2. Th. 10.
One original declamation. English 3.

THIRD TERM.

Floriculture—Agriculture 6. M. W. 1: 30.	2
Soils and Fertilizers—Agriculture 7. W. F. S. 8.	3
Olericulture—Agriculture 8. T. Th. 8	2
German—German 3. T. Th. S. 11 or Logic—Philosophy 1. T. Th. S. 10	3
Mineralogy—Geology 2. M. 8 to 11. W. F. 9 to 11	3

Farm Work—Agriculture 14. Ten hours per week.
Military Tactics—Military Science 2. F. 11.
One original declamation—English 3.

Senior Year.

FIRST TERM.

	Exercises per week.
Comparative Anatomy of Domestic Animals—Agriculture 9. T. Th. 8	2
Dairy Chemistry—Agriculture 12. S. 9	1
Discussion of Bulletins—Agriculture 13. T. Th. 10	2
Political Economy and Laws of Business—Political Science 1 and 2. T. Th. S. 11. W. F. 8	5
German—German 4. M. W. F. 11 or Psychology—Philosophy 2. M. W. F. 10	3
Farm Work—Agriculture 14. Ten hours per week.	
One Original Declamation—English 4.	

SECOND TERM.

Dairying—Agriculture 10. W. F. 1:30 to 4	2
Astronomy—Mathematics 6 / Meteorology—Meteorology 1 } T. W. Th. F. S. 9	5
Discussion of Bulletins—Agriculture 13 and Thesis. S. 8	1
Roads—Engineering 11. T. Th. 10.	2
German—German 5. M. W. F. 11 or Ethics—Philosophy 3. M. W. F. 10 or Advanced Political Economy—Political Science 4. T. Th. S. 11	3
Farm Work—Agriculture 14. Ten hours per week.	
One Original Declamation—English 4.	

THIRD TERM.

Domestic Animals—Agriculture 11. T. Th. 9	2
Discussion of Bulletins—Agriculture 13, and Thesis. T. Th. S. 8	3
German—German 6. M. W. F. 11 or Advanced Political Economy—Political Science 5. T. Th. S. 11	3
Constitutional Law—Political Science 3. M. T. W. Th. F. 10	5
Farm Work—Agriculture 14. Ten hours per week.	
One Original Declamation—English 4.	

COURSES IN ENGINEERING

Sophomore Year.

FIRST TERM.

	Exercises per week.
Analytic Geometry—Mathematics 4. T. W. Th. F. S. 8	5
Descriptive Geometry—Drawing 3 b. M. W. 1:30 to 4	2
Mechanics and Heat—Physics 1. T. Th. S. 10	3
French—French 4. T. Th. S. 9	3
Shopwork—Shopwork 1 d. Th. F. 1:30 to 4. F. 10 to 11:45	3
Military Tactics—Military Science 2. Th. 11.	
One Theme—English 2.	

SECOND TERM.

Differential Calculus—Mathematics 5 a. T. W. Th. F. S. 8	5
Perspective Drawing—Drawing 4 a. M. W. 1:30 to 4	2
Sound and Light—Physics 2. T. Th. S. 10	3
French—French 5. T. Th. S. 9	3
Shopwork—Shopwork 1 e. Th. F. 1:30 to 4. F. 10 to 11:45	3
Military Tactics—Military Science 2. Th. 11.	
One Theme—English 2.	

THIRD TERM.

Integral Calculus—Mathematics 5 b. T. W. Th. F. S. 8	5
Surveying—Engineering 1. M. T. W. Th. F. 1:30 to 4	5
Electricity and Magnetism—Physics 3. T. Th. S. 10	3
French—French 6. T. Th. S. 9	3
Military Tactics—Military Science 2. M. 11.	
One Theme—English 2.	

Junior Year.

FIRST TERM.

Mechanism—Engineering 2. W. F. 8. T. Th. S. 8 to 11 . .	5
Inorganic Chemistry—Chemistry 1. M. W. F. 10	3
Physical Laboratory—Physics 4. M. T. W. 1:30 to 4 . . .	3
German—German 1. T. Th. S. 11	3
Shopwork—Shopwork 2 a. Th. F. 1:30 to 4	2
Military Tactics—Military Science 2. M. 11.	
One Original Declamation—English 3.	

SECOND TERM.

Mechanics of Engineering—Engineering 3a. T. W. Th. F. S. 9 .	5
Inorganic Chemistry—Chemistry 2. M. W. F. 10	3
Physical Laboratory—Physics 5. M. T. W. 1:30 to 4 . . .	3
German—German 2. T. Th. S. 11	3
Shopwork—Shopwork 2 b. Th. F. 1:30 to 4	2
Military Tactics—Military Science 2. Th. 10.	
One Original Declamation—English 3.	

THIRD TERM.

Mechanics of Engineering—Engineering 3 b. T. W. Th. F. S. 8 .	5
Mineralogy—Geology 2. M. W. F. 9 to 11	3
Physical Laboratory—Physics 6. M. T. W. 1:30 to 4 . . .	3
German—German 3. T. Th. S. 11	3
Shopwork—Shopwork 2 c. Th. F. 1:30 to 4	2
Military Tactics—Military Science 2. F. 11.	
One Original Declamation—English 3.	

COURSE IN MECHANICAL ENGINEERING

Senior Year.

FIRST TERM.

Materials of Construction—Engineering 4. M. 10. Th. F. S. 11	4
Thermodynamics—Engineering 5 a. M. T. W. 11	3
Mechanical Drawing—Drawing 4 b. F. S. 8 to 11	2
Mechanical Laboratory—Engineering 8 a. Th. F. 1:30 to 4	2
Shopwork—Shopwork 2 d. T. W. Th. 8 to 11	3
Chemical Laboratory—Chemistry 5. M. W. 1:30 to 4	2
One Original Declamation—English 4.	

SECOND TERM.

Machine Design—Engineering 9. M. T. W. Th. 11	4
Thermodynamics—Engineering 5 b. M. F. S. 10	3
Mechanical Laboratory—Engineering 8 b. W. Th. F. 1:30 to 4	3
Shopwork—Shopwork 2 e. T. W. Th. 8 to 11	3
Chemical Laboratory—Chemistry 6. M. T. 1:30 to 4	2
Thesis. F. 11	1
One Original Declamation—English 4.	

THIRD TERM.

Heat Motors—Engineering 6. W. Th. F. 11	3
Mechanical Laboratory—Engineering 8 c. M. T. 9 to 11:45	2
Shopwork—Shopwork 2 f. M. T. W. 1:30 to 4	3
Thesis. Th. F. 1:30 to 4. S. 9 to 11:45	3
Political Economy—Political Science 1. T. W. Th. F. S. 8	5
One Original Declamation—English 4.	

COURSE IN ELECTRICAL ENGINEERING

Senior Year.

FIRST TERM.

Materials of Construction—Engineering 4. M. 10. Th. F. S. 11 .	4
Thermodynamics—Engineering 5 a. M. T. W. 11 . . .	3
Mechanical Drawing—Drawing 4 b. F. S. 8 to 11	2
Mechanical Laboratory—Engineering 8 a. Th. F. 1:30 to 4 . .	2
Dynamos and Electro-Motors—Engineering 7. T. W. Th. 8 . .	3
Chemical Laboratory—Chemistry 5. M. W. 1:30 to 4 . . .	2
One Original Declamation—English 4.	

SECOND TERM.

Applications of Electricity—Engineering 10 a. M. T. W. Th. 11 .	4
Thermodynamics—Engineering 5 b. M. F. S. 10	3
Mechanical Laboratory—Engineering 8 b. W. Th. F. 1:30 to 4 .	3
Electrical Laboratory—Physics 7. T. W. Th. 8 to 11 . . .	3
Chemical Laboratory—Chemistry 6. M. T. 1:30 to 4 . . .	2
Thesis. F. 11	1
One Original Declamation—English 4.	

THIRD TERM.

Heat Motors—Engineering 6. W. Th. F. 11	3
Applications of Electricity—Engineering 10 b. W. Th. F. 1:30 to 4	3
Electrical Laboratory—Physics 8. M. T. 9 to 11:45 . . .	2
Thesis. M. T. 1:30 to 4. S. 9 to 11:45	3
Political Economy—Political Science 1. T. W. Th. F. S. 8 . .	5
One Original Declamation—English 4.	

COURSE IN TECHNICAL CHEMISTRY

Sophomore Year.

The studies for this year are the same as those of the Sophomore Year in the Course in Agriculture, except that Mineralogy—Geology 2. M. W. F. 9 to 11 is substituted for Entomology in the third term.

Junior Year.

FIRST TERM.

Chemistry of Plant Growth—Agriculture 2. T. Th. 8	2
Plant Diseases—Botany 3. T. Th. 9 to 11	2
Chemical Laboratory—Chemistry 5. Th. F. 1:30 to 4. M. W. F. S. 9 to 11	6
Physical Laboratory—Physics 4. M. T. W. 1:30 to 4	3
German—German 1. T. Th. S. 11	3
Military Tactics—Military Science 2. M. 11.	
One Original Declamation—English 3.	

SECOND TERM.

Chemical Laboratory—Chemistry 6. Th. F. 1:30 to 4. M. W. F. 9 to 11:45	5
Applied Chemistry—Chemistry 7 a. T. Th. 9	2
Physical Laboratory—Physics 5. M. T. W. 1:30 to 4	3
Geology—Geology 1. T. Th. S. 8	3
German—German 2. T. Th. S. 11	3
Military Tactics—Military Science 2. Th. 10.	
One Original Declamation—English 3.	

THIRD TERM.

Chemical Laboratory—Chemistry 6. T. W. Th. F. S. 8 to 11	5
Applied Chemistry—Chemistry 7 b. M. W. 11	2
Physical Laboratory—Physics 6. M. T. W. 1:30 to 4	3
German—German 3. T. Th. S. 11	3
Shopwork—Shopwork 2c. Th. F. 1:30 to 4	2
Military Tactics—Military Science 2. F. 11.	
One Original Declamation—English 3.	

Senior Year.

FIRST TERM.

Chemical laboratory—Chemistry 8. M. W. F. 1:30 to 4. T. Th. 8 to 11	5
Organic Chemistry—Chemistry 9. T. Th. 1:30 to 4	2
Chemical Journals—Chemistry 10. S. 9	1
German—German 4. M. W. F. 11	3
Political Economy—Political Science 1 } T. Th. S. 11. W. F. 8	5
Laws of Business—Political Science 2 }	
One Original Declamation—English 4.	

SECOND TERM.

Chemical Laboratory—Chemistry 8. M. T. W. Th. F. 1:30 to 4	5
Astronomy—Mathematics 6 } T. W. Th. F. S. 9	5
Meteorology—Meteorology 1 }	
Chemical Journals—Chemistry 10. S. 10	1
Chemical Philosophy—Chemistry 11 a. T. Th. 10	2
German—German 5. M. W. F. 11	3
One Original Declamation—English 4.	

THIRD TERM.

Chemical Laboratory—Chemistry 8. M. T. W. Th. F. 1:30 to 4	5
Chemical Journals—Chemistry 10. S. 10	1
Chemical Philosophy—Chemistry 11 b. T. Th. 9	2
Constitutional Law—Political Science 3. M. T. W. Th. F. 10	5
German—German 6. M. W. F. 11	3
One Original Declamation—English 4.	

GENERAL COURSE

Sophomore Year.

FIRST TERM.

		Exercises per week
Structural Botany—Botany 2 Introductory Zoology—Zoology 1	T. W. Th. F. S. 1:30 to 4	4
Early English—English 5.	M. p. m. W. F. 8	3
French—French 1 or 4.	T. Th. S. 8 or 9	3
Inorganic Chemistry—Chemistry 1.	M. W. F. 10	3
Mechanics and Heat—Physics 1.	T. Th. S. 10	3
Military Tactics—Military Science 2.	Th. 11	1
One Theme—English 2.		

SECOND TERM.

Elizabethan Writers—English 6.	M. 3 W. F. 8	3
French—French 2 or 5.	T. Th. S. 8 or 9	3
Inorganic Chemistry—Chemistry 2.	M. W. F. 10	3
Organic Chemistry—Chemistry 3.	Th. F. p. m.	2
Sound and Light—Physics 2.	T. Th. S. 10	3
Animal Biology—Zoology 2 or	T. W. 3	3
Advanced Free-hand Drawing—Drawing 1 d	Th. F.	2
Military Tactics—Military Science 2.	Th. 11	1
One Theme—English 2.		

THIRD TERM.

French—French 3 or 6.	T. Th. S. 8 or 9	3
Entomology—Zoology 3.	M. W. F. 9 to 11	3
Surveying—Engineering 1.	M. T. W. Th. F. S. p. m.	5
Organic Chemistry—Chemistry 4.	W. F. 8	2
Electricity and Magnetism—Physics 3.	T. Th. S. 10	3
Military Tactics—Military Science 2.		1
One Theme—English 2.		

Junior Year.

FIRST TERM.

German—German 1. T. Th. S. 11	3
American Political History—History 7. M. W. F. 10	3
Writers of the Restoration—English 7. Th. F. 3	2
Military Tactics—Military Science 2. M. 11	1
One Original Declamation—English 3.	

Elective, eight exercises per week, from the following:

Analytic Geometry—Mathematics 5. T. W. Th. F. S. 8	5
Early Modern History—History 4. T. Th. S. 8	3
Chemistry of Plant Growth—Agriculture 2. T. Th. 8	2
Pomology—Agriculture 1. W. F. 8	2
Economic Ornithology—Zoology 4. S. 8.	1
Chemical Laboratory—Chemistry 5. M. T. W. 1:30 to 4	3
Physical Laboratory—Physics 4. M. T. W. 1:30 to 4	3

SECOND TERM.

German—German 2. T. Th. S. 11	3
American Literature—English 10. M. W. F. 10	3
Victorian Writers—English 8. Th. F. 3	2
Military Tactics—Military Science 2. M. 11	1
One Original Declamation—English 3.	

Elective, eight exercises per week, from the following:

Calculus—Mathematics 6. T. W. Th. F. S. 8	5
Geology—Geology 1. T. Th. S. 8	3
European History since 1789—History 5. T. Th. S. 8	3
American Literature—English 10. W. F. 9	2
Food and Nutrition—Agriculture 3. T. Th. 9	2
Chemical Laboratory—Chemistry 6. M. T. W. 3	3
Physical Laboratory—Physics 5. M. T. W. 3	3

THIRD TERM.

German—German 3. T. Th. S. 11	3
Logic—Philosophy 1. T. Th. S. 10	3
Mineralogy—Geology 2. M. W. F. 9 to 11	3
Military Tactics—Military Science 2. F. 11	1
One Original Declamation—English 3.	

Elective, five or six exercises per week, from the following:

Calculus—Mathematics 6. T. W. Th. F. S. 8	5
American History to 1789—History 6. T. Th. S. 8	3
Chemical Laboratory—Chemistry 6. M. T. W. p. m.	3
Physical Laboratory—Physics 6. M. T. W. p. m.	3
English Romance—English 9. M. T. W. 3	3

Senior Year.

FIRST TERM.

Political Economy—Political Science 1 Laws of Business—Political Science 2	W. F. 8. T. Th. S. 11.	5
German—German 4.	M. W. F. 11	3
Psychology—Philosophy 2.	M. W. F. 10	3
One Original Declamation—English 4.		
Study of Words—English 11.	Th. F. 3	2
Chemical Laboratory—Chemistry 8 Advanced Zoology—Zoology 5 Advanced Botany—Botany 4	[Elect one] M. T. W. 1:30 to 4	3

SECOND TERM.

English 4 required: sixteen exercises elective.

German—German 5.	M. W. F. 11	3
Astronomy—Mathematics 6 Meteorology—Meteorology 1	T. W. Th. F. S. 9	5
Roads—Engineering 11.	T. Th. 10	2
Ethics—Philosophy 3.	M. W. F. 11	3
Advanced Political Economy—Political Science 4.	T. Th. S. 11	3
Advanced Rhetoric—English 12.	Th. F. 1:30 to 4	2
One Original Declamation—English 4.		
Chemical Laboratory—Chemistry 8.	M. T. W. 1:30 to 4	3
Advanced Zoology—Zoology 5.	M. T. W. 1:30 to 4.	3
Advanced Botany—Botany 4.	M. T. W. 1:30 to 4	3

THIRD TERM.

English 4 and Thesis Work required: eleven to fourteen exercises elective

Constitutional Law—Political Science 3 Laws of Business—Political Science 2	M. T. W. Th. F. 10	5
German—German 6.	M. W. F. 11	3
Advanced Political Economy—Political Science 5.	T. Th. S. 11	3
Thesis Work.		2 to 5
Chemical Laboratory—Chemistry 8.	M. W. F. p. m.	3
Advanced Zoology—Zoology 5.	M. W. F. p. m.	3
Advanced Botany—Botany 4.	M. W. F. p. m.	3
One Original Declamation—English		4

TWO-YEARS COURSE IN AGRICULTURE

First Year.

FIRST TERM.

	Exercises per week
Agriculture	2
Comparative Anatomy of Domestic Animals	2
Horticulture (Pomology)	2
Mathematics	3
English	2
Drawing	2

Practical Work, ten hours.

SECOND TERM.

Stock feeding	2
Dairying (four weeks)	5
Forestry	1
Bookkeeping	2
Mathematics	3
English	2

Practical Work, ten hours.

THIRD TERM.

Botany	5
Horticulture (Vegetable Gardening)	2
Floriculture	2
Mathematics	3
English	2

Practical Work, ten hours.

Second Year.

FIRST TERM.

Field Crops	2
Botany and Zoology	5
Mathematics	3
English	2
Chemistry	3

Practical Work, ten hours.

SECOND TERM.

Animal Biology	2
Geology	3
Mathematics	3
English	2
Chemistry	3

Practical Work, ten hours.

THIRD TERM.

Breeds and Breeding	2
Entomology (Insects)	3
Surveying	5
English	2
Physics	2

Practical Work, ten hours.

THE NEW HAMPSHIRE COLLEGE SUMMER SCHOOL OF BIOLOGY

PROGRAMME OF THE THIRD ANNUAL SESSION

The Summer School of Biology conducted by the New Hampshire College of Agriculture and the Mechanic Arts was established in 1894 for the purpose of giving teachers in the secondary and lower schools an opportunity to acquire a sound knowledge of the essential features of plant and animal life by means of laboratory studies of the more important organic types. These laboratory exercises have been supplemented by lectures and reading upon the elements of classification and biological relations, and by special discussions, illustrated by exhibits, of those phases of natural history that may readily be used for nature studies in the lower schools.

For the session of 1896, to continue for the four weeks between July 6 and August 1, the following courses are offered:

(1). A laboratory course in zoölogy, consisting of personal studies of the morphology and biology of the principal types of animal life, beginning with the Amœba and going upwards in the scale of life, together with lectures upon their classification and biological relations.

(2). A laboratory course in botany, consisting of personal studies of the principal types of plant life, beginning with the lowest forms and going upward, together with studies of their classification and biological relations.

These are coördinate courses designed to give the student a first-hand knowledge of the living world, and to fit him for teaching the biological sciences in the high school, or intelligently to conduct nature studies in the lower schools. Students attending the summer school for the first time are advised to take both these courses unless they have previously pursued similar ones.

(3). A course in elementary entomology, devoted to a special study of the habits, structure, and classification of insects.

(4). A course in the systematic botany of the higher plants, designed to give a general knowledge of the higher forms of

plant life, and to familiarize the student with the names and peculiarities of the species forming the New England flora.

(5). A course in the collection and cultivation of specimens for biological study, designed especially for teachers of botany and zoölogy.

EXPENSES OF ATTENDANCE

The fee for the Summer School has been fixed at $10.00. Satisfactory rooms and board can be obtained for from $4.00 to $5.00 per week, so that the expenses of attendance will be very moderate.

CERTIFICATE AND APPLICATION

A certificate will be given to all who satisfactorily complete one or more of the courses offered.

An illustrated circular giving full announcement of the School will be sent to any address upon application to President C. S. Murkland or Professor C. M. Weed, Durham, N. H.

NON-RESIDENT COURSE IN AGRICULTURE

The Non-resident Course in Agriculture conducted by the New Hampshire College of Agriculture and the Mechanic Arts was established in January, 1894, and has been in successful operation ever since. The course is primarily designed to meet the needs of those farmers' sons who are unable to leave home to attend college, but who feel the need of the fuller knowledge of their work which the college offers. It has enrolled a considerable number of such students, and also has attracted many young men in cities who intend to become farmers.

The course is conducted as a correspondence course, books and bulletins being sent the student, who studies them and returns answers to examination questions. The bulletins are furnished free and the books at a discount from publishers' prices, averaging about 25 per cent.

In the following pages will be found a statement of the methods of this course, list of the books used, blank forms of application, and such other information as the prospective student is likely to desire.

METHODS

The methods of the course are briefly as follows:

1. It is free to all, with no entrance examination or fee. The student may begin at any time; and the privileges of the course are not limited to residents of New Hampshire.

2. Students are offered the option of working for a certificate or not, as they see fit, but they are strongly urged to do the former. Those so working will, as studies are finished, send in answers to sets of examination questions; those not so working will submit a statement that the requisite reading has been carefully done.

3. Each of the books and pamphlets is estimated at a certain number of exercises, an exercise averaging ten pages of reading matter.

4. The satisfactory completion of six hundred exercises entitles the student to a certificate. It is probable that under ordinary conditions this will require about two years.

5. Each student working for a certificate is required to take certain general studies, such as Soils, Tillage, Noxious Insects, Fungous Diseases, Meteorology, Laws of Plant Growth, Farm and Household Chemistry, Fertilizers, etc., and to select at least three lines of study from the following similar subjects:

Dairying and Stock-feeding.
Poultry-keeping.
Orchard Fruits.
Small Fruits.
Vegetables.
Floriculture.
Plant Propagation.
Forestry.
Commercial Horticulture and Market Gardening.

Students not working for a certificate may select any of the above subjects they desire, but it is recommended that they pursue the prescribed lines of general reading in connection with special subjects.

6. The cost of books is not great, ranging from $15 to $20 for the full certificate course. As far as possible the college will furnish bulletins free. In case two or three students live near each other they can use the same set of books and thus reduce the cost. The student will remit by postal money order or registered letter a small amount ($5 is sufficient) to cover

the cost of the first instalment of books, which will be ordered sent immediately. When he has finished these books he will send a similar remittance for the next instalment; and so on through the course. The student may suit his own convenience as to the amount of each instalment.

A circular giving full information concerning this non-resident course will be sent to any address upon application to President C. S. Murkland or Prof. C. M. Weed, Durham, N. H.

THE TWO YEARS' COURSE IN AGRICULTURE

The Two Years' Course in Practical and Theoretical Agriculture provided for by the Legislature of 1895 is now established and is open to "students who can pass a fair and reasonable examination in reading, spelling, writing, arithmetic, English grammar, and the geography and history of the United States." This course is especially devoted to the study of practical and theoretical agriculture in its various branches and the natural sciences which are so closely related to successful farming. At least ten hours each week are spent in practical exercises, which so far as possible are educational in their nature. This work is done on the farm, or in the garden, barn, green-house, or shop.

The course offers unusual opportunities to young men to obtain in a short time and at small expense a knowledge of the fundamental principles of agriculture.

For subjects included in this course see "Courses of Study."

TEN WEEKS' WINTER COURSE IN AGRICULTURE

In addition to the winter dairy school the New Hampshire College of Agriculture and the Mechanic Arts offers a Ten Weeks' Winter Course in Agriculture, beginning Thursday, January 10, and continuing until Wednesday, March 20, 1896.

This is open to any one over fifteen years of age, upon payment of a fee of five dollars. The following studies are offered

to students in this course: Dairying, Stock-feeding, Forestry, Entomology, Geology, the Propagation of Plants, Animal Biology, work in barn, greenhouse, or wood-shop.

Students entering this course may take the work of the dairy school during February without extra charge, if they so desire.

The expense of the course may be estimated as follows:

Room and board, ten weeks, at $4.00 . .	$40.00
Tuition fee	5.00
Books	5.00
Total	$50.00

Applicants should report at the president's office, Thompson Hall, Durham, on Wednesday, January 9, 1896.

THE SECOND WINTER DAIRY SCHOOL

The New Hampshire College of Agriculture and the Mechanic Arts announces the second session of its winter Dairy School, giving a four weeks' course in dairying, for which special arrangements have been made. It will begin Monday, February 3, and close Saturday, February 29.

The creamery will be well equipped with machinery, including various kinds of separators, Babcock testing machines, pasteurizing apparatus, churns, butter workers, ripening vats, etc. A number of these machines will be loaned by the manufacturers for use throughout this course.

Instruction will be given in dairy husbandry, milk testing, butter making, dairy bacteriology, dairy engineering, and the breeding and feeding of dairy cows.

The Dairy School will be under the immediate supervision of Prof. F. Wm. Rane, B. Agr., M. S., who will be assisted by Mr. F. W. Mossman, B. S., a graduate of the Massachusetts Agricultural College and the Wisconsin Dairy School. Instruction will also be given by other members of the college faculty.

The following subjects will be studied: Butter making, milk testing, dairy husbandry, pasteurizing milk, dairy engineering, cattle insects, and dairy bacteriology.

REQUIREMENTS FOR ENTRANCE

No entrance examination is required. Students should be sixteen years of age, and have a fair common school education. While some previous experience in a creamery is desirable, it is not insisted upon.

ESTIMATE OF EXPENSES

Room rent, four weeks at $1.00, . .	$4.00
Board, four weeks at $3.00, . . .	12.00
Fee, ...	5.00
Note books, ...	1.00
Total, ...	$22.00

For circulars or further information concerning the Dairy School, address President Charles S. Murkland, or Professor C. M. Weed, Secretary, Durham, N. H.

Dairy school students should report for registration at the president's office, Thompson Hall, Monday, February 3, 1896.

HOME CLASSES IN AGRICULTURE

During recent years a movement of great significance has been agitating the educational centres of the English-speaking world. It is known as university extension, or, better, as educational extension. It has resulted from the recognition of the fact that comparatively few people can go to college or university; and consists essentially in taking the college to those who cannot come to the college; in offering to everyone everywhere the opportunity of a college education. It seeks to solve the problem of the education of the masses by widening the scope of existing institutions. Its history shows that it is in peculiar harmony with the sentiments and systems of the American people, and it has well been called "the most significant educational movement of the nineteenth century."

While the older colleges and universities have done much in the way of university extension along the lines of higher education, little if any definite organized effort has been made to

adapt the movement to agricultural education. Much tending in the same direction in the way of lectures and reading courses has been done in many states, as well as in New Hampshire, where the College of Agriculture and the Mechanic Arts has had in successful operation for some time past a system of lectures available by any agricultural organization, and a non-resident course in agriculture open to anyone elsewhere. While there is no intention of abandoning either of these lines of work, the College believes the time is ripe for so combining them in certain localities as to carry out more fully the educational extension idea. It therefore makes this proposition:

If ten or more persons in any grange or other agricultural organization will read the books and pamphlets on the list of any of the subjects named, the College will furnish one or more lectures upon that subject, provided the ordinary expenses of the lecturer are paid by the organization. The College will also furnish the books at a reduced price, with very few exceptions giving a reduction of 25 per cent. on the usual price.

It is believed that this proposition is an entirely practicable one, which, if successfully carried out, should be productive of great good. The difficulty with isolated lectures in public meetings and institutes is that the hearers come with no special preparation in that line of thought, often merely to be amused, and the effect produced is usually not a permanent one. On the other hand, the difficulty with long reading courses is that it seems too large an enterprise for the great majority of people to take up. The present proposition is a medium between these two extremes; it offers to the people of each locality the opportunity for a short course of study of one or more subjects in which they are especially interested, with the use of a few books of small cost, and the privilege of instruction from a specialist to whom they may apply for any special information they desire.

A circular giving full information concerning subjects and books available for such home classes will be sent to any address on application to President Charles S. Murkland, Durham, N. H.

GENERAL INFORMATION

ATTENDANCE

All regular students are required to attend chapel and rhetoricals, and to register for at least sixteen exercises per week. Juniors, Sophomores, and Freshmen are required to attend military drill.

PRIZES

I. The Smyth Prizes.—Hon. Frederick Smyth, of Manchester, N. H., offers to the members of the Senior and Junior classes two prizes, one of twenty dollars and the other of ten, for the best essays on subjects connected with agriculture or the mechanic arts; also three prizes, one of twenty, one of fifteen, and one of ten dollars, for excellence in oratory, open to the upper classes; also two prizes for reading, one of fifteen and one of ten dollars, open to the lower classes.

II. Bailey Prize.—Dr. C. H. Bailey, of Gardner, Mass., and E. A. Bailey, B. S., of Winchendon, Mass., offer a prize of ten dollars for proficiency in chemistry.

III. Erskine Mason Memorial Prize.—Mrs. Erskine Mason, of Stamford, Conn., has invested one hundred dollars as a memorial of her son, a member of the class of '93, the income from which is to be given, for the present, to that member of the Senior class who has made the greatest improvement during his course.

DEGREES

The degree of Bachelor of Science will be conferred upon those who complete a four years' course, or its equivalent, and pass the final examinations. Each candidate for a degree must prepare a thesis on some subject relating to the course of study taken.

The college offers opportunities for post-graduate study in

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Conant Hall.

agricultural, scientific, and engineering lines. After the satisfactory completion of an appropriate amount of work, advanced degrees will be given.

BUILDINGS

THOMPSON HALL

Thompson Hall, the main college building, has a length of 128 feet, exclusive of the porte cochère, which is 40 feet long, and a width of 93 feet in the widest part. It is built of granite and brick, and has three stories besides the basement.

One half of the first floor and basement is devoted to the library, which is provided with a large, well-lighted reading room for papers and magazines, a reference room for special work, a librarian's room, a delivery room, and shelf space for fifty thousand volumes.

The remainder of the first floor is used for offices, recitation rooms, and a waiting room for women.

On the second floor are more offices and recitation rooms, and the botanical and zoölogical laboratories and the museum.

On the third floor is the large hall used as an auditorium, two literary society rooms, and the bell-boy's room.

The building is lighted by gas and electricity, and provided with the most approved system of heating and ventilation.

CONANT HALL

[Chemical and Physical Laboratories]

Conant Hall contains the laboratories and lecture rooms for instruction in chemistry, physics, and electrical engineering. It is a substantial brick building, 92 by 70 feet, and three stories high, including the basement. It is heated by steam brought from the shops, lighted by gas and electricity, and provided with a system of thorough ventilation. Water, gas, high pressure steam, hydrogen, oxygen, vacuum, and blast are supplied through pipes whenever needed, and the lecture rooms, in addition, have switches controlling both dynamo and battery currents, and arrangements for stereopticon illustration.

The basement contains a small work shop, the battery, photo-

meter, photographic and comparator rooms, a clock room protected by double walls against changes of temperature, an acid room, and a water and gas laboratory, provided with the necessary fixtures and appliances.

The first floor, with the exception of one room, is occupied by the physics department. It contains the mineralogical laboratory, which is provided with tile-covered desks and other facilities for blowpipe analysis; the junior physical laboratory; an apparatus room; a reading room and reference room for physical and electrical books and periodicals; an electrical laboratory, from the neighborhood of which masses of iron have been excluded, so that magnetic measurements can be made with a good degree of accuracy; and the physical lecture room, which is provided with all necessary conveniences, as before mentioned. For optical experiments the room can be darkened by means of special window-shutters, operated from one of the lecture desks. A stone pier between the two desks makes it possible to use delicate instruments.

The second floor is given up entirely to the chemical department. It contains storerooms, an organic laboratory, a qualitative laboratory, a private laboratory, a dark room for polariscopic and spectroscopic work, a lecture room provided with facilities as before described, a quantitative laboratory, and a room to contain the delicate chemical balances and most important reference works.

The laboratories are fitted up with the most modern accessories, and with special reference to the kind of work to be performed in each.

THE SHOP BUILDINGS

The shops have been planned and built with the object of providing facilities for instruction in the working of wood and metals, and in the design, construction, care, and management of machinery. Incorporated with the shops is a central station for furnishing heat, light, water, and power, wherever needed in any of the college buildings; and the machinery of this station forms a part of the material equipment of the engineering departments.

The main shop building is 42 by 106 feet, and two stories

WORKSHOPS.

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high, with a basement 31 by 42 feet. In a separate one-story building, 40 by 100 feet, on a level with the basement of the main building, are the boiler house, forge shop, coal shed, and foundry.

In the boiler room, three boilers, aggregating one hundred and sixty horse-power, furnish steam to all the college buildings, wherever needed for heating or power. A brick chimney 95 feet high carries away the waste gases from the furnaces. The coal room provides for the storage of two hundred tons of coal conveniently near the boilers.

The basement of the main shop building is used as an engine room, containing a forty horse-power engine, furnishing power for the shops and for the electric lighting; a dynamo for lighting the college buildings and campus; and the large steam pump, which receives water by gravity from the reservoir one half mile distant and forces it through underground mains to the various hydrants and buildings. The engine room serves as a power laboratory, and the machines mentioned, with others, will give to students opportunity for making efficiency tests.

On the first floor of the main shop building, a lavatory is provided. The largest room on this floor is the machine shop, where there is opportunity for practice in the operations of working metals by cutting tools, both by hand work and by machinery.

The second floor of this building is mainly occupied by a wood shop, in which the common branches of carpentry, joinery, and pattern making are taught. Practice is given in the use of carpenter's tools, and in the care and operation of the machines of most general use in wood-working.

The shop buildings are constructed on the "slow-burning" principle, with thick walls and heavy, continuous plank floors. The rooms are all well lighted and well ventilated.

APPARATUS

The various chemical laboratories are supplied with a full line of such apparatus as is required in each. Besides all necessary glass and porcelain ware, this includes water baths; drying ovens, combustion, muffle, and assay furnaces; platinum dishes and crucibles; polariscope; spectroscope; balances; lantern and other lecture appliances, etc.

The physical laboratory is equipped with a good collection of the usual apparatus for laboratory work and lecture room illustration, to which will be continually added pieces purchased or made in the college shop.

In electricity and magnetism the equipment includes instruments of high precision, and of the latest forms, for the measurement of current electro-motive force and resistance, as well as others of less accuracy for elementary work.

For more strictly electrical engineering work the department has the five-hundred light alternator used in lighting the college buildings, a direct-current "exciter" dynamo, all the apparatus of a complete fifty-five light Edison isolated electric lighting plant, a Sorley storage battery of twenty-six cells, arc and incandescent lamps, and standard forms of voltmeter, ammeter, and transformer.

The zoölogical laboratory is well supplied with aquaria, microscopes, dissecting tools, charts, reference-books, collections, etc.

The botanical laboratory is supplied with a good herbarium, microscopes, and the other necessary appliances.

The surveying instruments are sufficient in number and of the most approved pattern.

MUSEUM

The museum had for a nucleus the collections made during the state geological survey. To this additions have been made from various sources. Many specimens are being collected to illustrate zoölogy—especially entomology. It occupies a large, well-lighted room in the main building.

LIBRARY

The library of the college consists of about four thousand bound volumes besides pamphlets. A considerable part of these are new and expensive books, making good working libraries for the different departments of instruction, including economic science and English and American literature.

Students also have the free use of the Durham public library of about four thousand well-selected volumes.

The college supports a reading-room, which is well supplied with the leading American and foreign periodicals.

FARM

The farm contains more than three hundred acres of valuable land. It has been provided partly from the funds given by Hon. John Conant and partly from the Benjamin Thompson estate.

It is used for the purpose of an experiment station, for which it is considered by leading agriculturists as being especially fitted.

A model barn has been erected, at an expense of about ten thousand dollars.

SITUATION AND RAILROAD CONNECTIONS

Durham is situated on the western division of the Boston & Maine railroad, sixty-two miles from Boston, and about midway between Rockingham Junction and the city of Dover, being five miles from the latter place.

PECUNIARY AID AND EXPENSES

Tuition is $60 per year, although numerous scholarships give free tuition to many New Hampshire students. The trustees have arranged the scholarships as follows: There are thirty Conant scholarships, each paying $40 and tuition, $60,—total, $100. These are to be assigned under the following conditions: 1. They are to be given to young men taking an agricultural course; 2. Each town in Cheshire county is entitled to one scholarship, and Jaffrey is entitled to two; 3. Scholarships not taken by students from Cheshire county, and those in excess of the number of towns, are to be assigned to agricultural students at the discretion of the Faculty.

There are twenty-four senatorial scholarships—one for each senatorial district. Each scholarship is to pay tuition, $60. Senatorial scholarships not filled can be assigned to students from other localities at the discretion of the Faculty; they are open to students in all courses.

Early application should be made for these scholarships. They will be reserved for those respective towns and districts until August 1 of each year, after which they may be otherwise assigned for the year.

These scholarships are given for the purpose of aiding deserving students, and will be withdrawn from those who use tobacco or intoxicating liquors, or show themselves not deserving. Janitorships, work on the farm, etc., also furnish assistance to a considerable extent.

Expenses may be estimated as follows:

Tuition	Free	$60.00
Text-books	$10.00	20.00
Library and reading-room tax . . .	6.00	6.00
Room rent, including fuel	18.00 to	40.00
Board $3 to $3.50 per week, for 35 weeks .	105.00 to	122.50
Total	$139.00	$298.50

Room rent is estimated on the supposition that two students occupy the same room.

Rooms may be obtained either furnished or unfurnished.

For further information, address President Charles S. Murkland, or Prof. C. M. Weed, Secretary of the Faculty.

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NESMITH HALL.

AGRICULTURAL EXPERIMENT STATION

This department of the college is provided for by the national government, at an annual expense of fifteen thousand dollars. The act of congress provides,—

That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals ; the diseases to which they are severally subject, with the remedies for the same ; the chemical composition of useful plants at their different stages of growth ; the comparative advantages of rotative cropping, as pursued under a varying series of crops ; the capacity of new plants or trees for acclimation ; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds ; the adaptation and value of grasses and forage plants ; the composition and digestibility of the different kinds of food for domestic animals ; the scientific and economic questions involved in the production of butter and cheese ; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective states or territories.

NESMITH HALL

Nesmith Hall, a brick building two stories in height, is used for the work of the Agricultural Experiment Station. It contains offices and working rooms, a reference library, a chemical laboratory, a bacteriological and microscopical laboratory, and an agricultural museum.

BOARD OF CONTROL

Hon. GEORGE A. WASON, *President*	New Boston.
Pres. CHAS. S. MURKLAND, *ex-officio*	Durham.
CHARLES W. STONE, A. M., *Secretary*,	East Andover.
Hon. JOHN G. TALLANT	Pembroke.
HENRY W. KEYES	Haverhill.

STATION COUNCIL

CHARLES S. MURKLAND, A. M., Ph. D., *President and Acting Director*

CHARLES H. PETTEE, A. M., C. E., *Meteorologist.*

FRED W. MORSE, B. S., *Chemist.*

HERBERT H. LAMSON, M. D., *Microscopist and Photographer.*

CLARENCE M. WEED, D. Sc., *Entomologist.*

FRANK WILLIAM RANE, B. Ag., M. S., *Agriculturist and Horticulturist.*

RUEL SEABURY ALDEN, B. S., *Farm Superintendent.*

LEIGH HUNT, B. S., *Assistant Horticulturist.*

CHARLES D. HOWARD, B. S., *Assistant Chemist.*

F. W. MOSSMAN, B. S., *Assistant in Dairying.*

RICHARD FITZGERALD, *Clerk.*

PRIZE RECORD FOR 1895.

SMYTH PRIZES.

GIVEN BY HON. FREDERICK SMYTH, OF MANCHESTER, N. H.

Speakers:
1st. JOHN L. T. SHAW.
2d. FRED N. FOSS.
3d. DAVID B. BARTLETT.

Readers:
1st. RENA E. YOUNG.
2d. EDNA E. FOSS.

BAILEY PRIZE.

GIVEN BY DR. C. H. BAILEY, OF GARDNER, MASS., AND E. A. BAILEY, B. S., OF WINCHENDON, MASS.

FRANK C. BRITTON.

ERSKINE MASON MEMORIAL PRIZE.

FRANK S. ADAMS.

ENTRANCE EXAMINATION PAPERS*

I. ENGLISH

The composition should be correct in spelling, grammar, and punctuation, and should show a clear purpose and an orderly method.

1. Write at least three pages on one of the following subjects:
   (1.) The Combat between Sohrab and Rustum.
   (2.) Sir Roger at the Play.
   (3.) The School Days of David Copperfield.
2. Correct the errors in the following sentences:
   (1.) The boy stood on the burning deck,
   Whence all but he had fled.
   (2.) I am going and see him this afternoon.
   (3.) He had n't seen what he had ought to do.
   (4.) Get up on to the platform.
   (5.) Try and read as many a good book as you can.
   (6.) I guess he will resign, for he told he was going to.
3. Which is the right expression:

He felt badly at his loss, or, He felt bad at his loss. If you substitute "discouraged" for "badly" or "bad" in the above, what part of speech will it be?

II. AMERICAN HISTORY

1. Give a brief account of the conquest of Peru.
2. What nations held territory in North America during the seventeenth century? What did each nation hold?
3. Give an account of King Philip's War.
4. Give an outline of the French and Indian War.
5. Give a brief but comprehensive account of the Siege of Yorktown (1781).
6. Give a brief account of the adoption of the Constitution.

* Given as specimens of average papers.

7. Give the causes and results of the Mexican War.

8. Give a brief account of each acquisition of United States territory.

9. Give an account of the principal military operations during the year 1864.

10. Explain the Emancipation Proclamation and the Alabama claims.

III. PHYSICAL GEOGRAPHY

1. Name the principal mountain chains of North America and South America. Give the situation of each.

2. Classify volcanoes. Locate and give an account of some of the principal ones.

3. Describe the Arctic current; the Japan current; and the equatorial currents of the Atlantic and the Pacific.

4. What are isothermal lines? If the earth were divided by isothermal lines into six zones, what would be included in each zone?

5. Draw a map of the United States and place upon it the isothermal lines which would pass through central New Hampshire.

6. Give a comprehensive account of the St. Lawrence basin.

IV. ARITHMETIC

1. Reduce $\frac{12012}{103740}$ to its lowest terms.

2. Divide $\frac{3}{2}$ of $\frac{5}{6}$ by $\frac{\frac{5}{3}}{\frac{4}{6}}$ and subtract the quotient from $\frac{2\frac{1}{2}}{4-\frac{2}{3}}$.

3. How many hectares in a rectangular piece of land 500 meters long and 25 meters wide?

4. The population of a certain city is 100,000. It has gained 20,000; what has been the gain per cent.?

5. Extract the square root of $\frac{6\frac{1}{4}}{2\frac{1}{4}}$ to five decimal places.

6. If 4 men build 19 rods of wall in $2\frac{1}{2}$ days, in how many days will 7 men build 20 rods?

7. A, B, and C formed a partnership, and cleared $20,000

A put in \$8,000 for 4 months, and then added \$2,000 for 6 months; B put in \$16,000 for 3 months, and then withdrawing half his capital, continued the remainder for 5 months longer: C put in \$13,500 for 7 months. How divide the profits?

8. Find the simple, the annual, and the compound interest on \$1,000 for 2 years, 5 months, and 7 days, at 6 per cent.

V. ALGEBRA

1. Define algebra, formula, coefficient, power, root, exponent, radical, term, factor, similar quantities.

2. From $3ax^2-(4a-2x)(x+2x)+a[y-(a+2y)]$ subtract $5a(x-y)+3a^2-2x^2(a+1)$.

3. Multiply $a^2x^{-\frac{1}{3}}-3x$ by $b+2x^{-2}$.

4. Divide $4a^2y^3x^{\frac{2}{3}}$ by $-2a^3yx^2$.

5. $4x-5y=10$ and $3x+12y=7$. Solve for x and y.

6. Factor a^3-x^3; a^3+x^3; and a^4-x^4.

7. The sum of two numbers is a. and their difference is b. What are the numbers?

8. Multiply $\sqrt{-x}$, $-\sqrt{-y}$, $-\sqrt{y}$, and $\sqrt{y}$.

9. $\sqrt{x-16}=8-\sqrt{x}$. Solve for x.

VI. PLANE GEOMETRY

1. Define geometry, proposition, theorem, problem, axiom, postulate, corollary, scholium, right angle, perpendicular, parallel, magnitude, and form.

2. Define trapezoid, rhombus, regular polygon, apothem, sector of a circle, and segment of a circle. Name and explain the different kinds of triangles.

3. Give expressions for the circumference and area of a circle. State the relations existing between similar areas.

4. Demonstrate that if a perpendicular be erected at the middle of a line, any point in that perpendicular is equally distant from the extremities of the line; also that any point without is nearer the extremity on its own side of the perpendicular.

5. Demonstrate that if two lines are cut by a third, making

the sum of the interior angles on the same side of the secant line equal to two right angles, the two lines are parallel.

6. Demonstrate that in the same or equal circles two incommensurable arcs are to each other as the angles which they subtend at the centre.

7. Demonstrate that the opposite sides of a parallelogram are equal.

8. Demonstrate that triangles mutually equiangular are similar.

9. Construct a fourth proportional to three lines.

CATALOGUE OF GRADUATES.

NOTE.—The arrangement is: (*a*) Name in full. (*b*) Degrees taken. (*c*) Residence at time of entering college. (*d*) Occupation, etc. (*e*) Present residence.

1871.

William Preston Ballard, B. S., Concord. Farmer. *Concord.*
Lewis Perkins, B. S., Hampton. Civil Engineer. *North Adams, Mass.*
Charles Henry Sanders, B. S., Penacook. Architect and Merchant. *Penacook.*
3—

1872.

Edwin Bartlett, B. S., Bath. Farmer. County treasurer, 1883. *Kinsley, Edwards Co., Kan.*
Frank Alexander White, B. S., Bow. Farmer. *Bow.*
2—

1873.

Frederick Erasmus Eldredge, B. S., Kensington. Lawyer. *Tacoma, Wash.*
James Fred Smith, B. S., A. M. (1885). Instructor in Iowa College. *Grinnell, Iowa.*
Charles Henry Tucker, B. S., Plaistow. Carriage Maker. *Amesbury, Mass.*
3—

1874.

Millard Fillmore Hardy, B. S., Nelson. Graduated Theo. Inst. Ct. 1878. Clergyman. *Harrisville.*
Henry Abbott Sawyer, B. S.,* North Weare. Business. Died, 1894.
2—*1

1875.

Walter Herman Aldrich, B. S., M. D. (Univ. N. Y. City, 1880), Troy. Physician. *Marlborough.*
Frank Pierce Curtis, B. S., Stoddard. Manager of Store. *Greenfield, Mass.*
Frank Veranus Emerson, B. S., Lebanon. Manufacturer. *East Lebanon.*
Charles Webster Hardy, B. S., M. D. (Mo. Med. Coll., 1881). Marlborough. Physician. *Waterville, Kan.*

Harvey Jewell, B. S., Winchester. Farmer. *Winchester.*
Charles Ormille Leavitt, B. S.,* Lebanon. Farmer. Died, 1877.
John Loney McGregor, B. S., D. D. S. (Phila. Dental Coll., 1877), M. D. (1883), Whitefield. Physician. *Whitefield.*
Eliel Peck, B. S., Lebanon. Farmer and Printer, 1875–'80. Merchant. *Kimball, Minn.*
Ira William Ramsay, B. S., Walpole. Farmer. *Walpole.*
Orlando Leslie Seward, B. S., Keene. Architect. *Keene.*
Emery Mason Willard, B. S., Harrisville. Drug Clerk. *15 Union St., Boston, Mass.*

11—*1

1876.

Herbert Cyril Aldrich, B. S., Troy. Insurance Agent. *Keene.*
Edmund Lawson Brigham, B. S., Jaffrey. Manufacturer. *Clinton, Mass.*
Joseph Warren Butterfield, B. S., Westmoreland. Farmer. *North Montpelier, Vt.*
Arthur Frank Chamberlain, B. S., Westmoreland. Commercial Traveller. *6543 Woodlawn Park, Chicago, Ill.*
Anson Ballard Cross, B. S., Holyoke, Mass. Paper Maker. *Readsborough, Vt.*
Warren Webster Kimball, B. S., Troy. Merchant. *Troy.*
Daniel Deeth Parker, B. S., Fitzwilliam. Manufacturer. *Gardner, Mass.*

7—

1877.

Rollin Kirk Adair, B. S., Indian Territory. Farmer. *Locust Grove, Cherokee Nation, Indian Ter.*
Homer Brooks, B. S., M. D. (N. Y. Hom. Med. Coll., 1881), Franconia. Physician. *342 Washington St., Haverhill, Mass.*
John Washington Carson, B. S., Mont Vernon. Farmer. *Mont Vernon.*
Charles Otto Chubert, B. S..* Troy. Died.
Charles Albert Edwards, B. S., LL. B.* (State Univ., Iowa, 1880.) Keene. Lawyer. Died, 1886.
William Francis Flint, B. S., Richmond. Farmer. *Winchester.*
Clinton Camillus Hall, B. S., Westmoreland. Farmer. *East Westmoreland.*
John Goodrich Henry, B. S., M. D. (1880), Chesterfield. Physician. *Winchendon, Mass.*
Charles Pitkin Hollister, B. S., North Montpelier, Vt. Farmer. *North Montpelier, Vt.*
George Mirick Holman, B. S., M. D., Fitchburg, Mass. Instructor in Bryant & Stratton's Commercial College. *Boston, Mass.*
Charles Appleton Hubbard, B. S., Troy. Clerk. *Newton Center, Mass.*

Charles Augustus Wheeler, B. S., East Calais, Vt. Farmer.
Bracken, Coral Co., Texas.
Everard Whittimore, B. S., Fitzwilliam. Merchant. *Hudson, Mass.*
13—*2

1878.

Ezra Eastman Adams, B. S., Manchester. Auctioneer.
237 and 249 Monroe St., Chicago, Ill.
Elmer Kilburn, B. S., C. E.,* Marlow. Civil Engineer. Died, 1881.
Charles Edward Record, B. S., Fitchburg, Mass. Farmer.
Fitchburg, Mass.
3—*1

1879.

Charles Hardy Bailey, B. S., M. D. (1881). Physician.
Gardner, Mass.
Richard Clinton Chapin, B. S., Chicopee, Mass. Agent for Nonotuck Paper Company. *Holyoke, Mass.*
Lucius M. Cragin, B. S., Lempster. Farmer. *Springfield, Vt.*
Nathaniel Cutter Holmes, B. S.,* Amherst. Lawyer. Died, 1887.
Fred Charles Parker, B. S., Lempster. Merchant. *Acworth.*
George Henry Wilkins, B. S., M. D. (N. Y. Hom. Med. Coll., 1883), Amherst. Physician. *Palmer, Mass.*
6—*1

1880.

Charles Harvey Hood, B. S., Derry. Milk Contractor.
Somerville, Mass.
1—

1881.

Edwin Thomas Aldrich, B. S., Troy. Insurance Clerk. *Keene.*
Henry Lyman Barnard, Troy. Clerk. *Troy.*
George Jordan Boardman, B. S.* Lawrence, Mass. Medical Student. Died, 1886.
Edwin Franklin Bristol, B. S., Harwinton, Conn. Mechanic.
Ascutneyville, Vt.
Artemas Terald Burleigh, B. S. Farmer. *Franklin.*
Frank Dana Ely, B. S., Cavendish, Vt. Business. *Cavendish, Vt.*
Sanford Eugene Emery, B. S., LL. D. (Albany Law School, 1886), Proctorsville, Vt. Lawyer. *Proctorsville, Vt.*
Charles Herbert Hazen, B. S., Hartford, Vt. Farmer. *Hartford, Vt.*
Frank Marston, B. S., Hartford, Vt. Business. *Olcott Falls, Vt.*
William Augustus Megrath, B. S., M. D. (1885), Cavendish, Vt. Physician. *Loudon.*
Fred Townsend Stanton, B. S., Strafford. Farmer. *Strafford Corner.*
Victor Hugo Stickney, B. S., M. D. (1883), Tyson, Vt. Physician.
Dickinson, Dak.

Samuel Austin Wallace, B. S., Ph. G. (Boston School of Pharmacy, 1886), West Hartford, Vt. Druggist. *Crookstone, Minn.*

George Herbert Whitcher, B. S., Strafford. Professor of Agriculture and Director of Experiment Station (1887–'94). Dealer in Real Estate. *Durham.*

14—*1

1882.

Harvey Lincoln Boutwell, B. S., LL. B. (Boston Univ., 1886), Hopkinton. Lawyer. 209 *Washington St., Boston, Mass.*

Dana Justin Bugbee, B. S., North Pomfret, Vt. Agent for Publishers. *North Pomfret, Vt.*

Robert Fletcher Burleigh, B. S., D. V. S. (Am. Veterinary Coll., 1885), M. D. (1887), Franklin, Instructor in Veterinary Science 1885–'88. Professor of Physiology and Veterinary Science, Kansas State Agricultural College, 1888–'89. Physician. *Rochester.*

La Forrest John Carpenter, B. S., Surry.

Edwin Preston Dewey, B. S., Hanover. Civil Engineer and Real Estate Agent, 245 Franklin Ave., Pasadena, Cal.

George Andrew Loveland, B. S., LL. B. (Univ. of N. Y. 1886). Norwich, Vt. Weather Bureau. *Crete, Neb.*

John Wright Mason, B. S., Hanover. Business. *Des Moines, Ia.*

Harlan Addison Nichols, B. S., Derry.

Frank Elmer Thompson, B. S., Stark. Lumberman. *Ridgeway, Penn.*

9—

1883.

Elmore Ferdinand Arnold, B. S., M. D. (Univ. City of N. Y., 1885) Londonderry, Vt. Physician. *Londonderry, Vt.*

Frank Landor Bigelow, B. S., Proctorsville, Vt. Instructor in Mathematics and Sciences, Goddard Seminary, Barre, Vt., 1883–'86. Business. *Rutland, Vt.*

Frederick Stocks Birtwhistle, B. S., Troy. With American Consulate. *Cartagena, Colombia, S. A.*

Noice D. Bristol, B. S., Harwinton, Conn. Clergyman. *Hamilton, Kan.*

Fred Plummer Comings, B. S., Lee. Trustee 1891—. Teacher. *Lee.*

Frank Harry Follansbee, B. S., Canaan. Railway Mail Clerk. *Enfield.*

Adams Clark French, B. S., Franklin Falls.

James Edgar Gay, B. S., Tunbridge, Vt. Woolen Manufacturer. *Cavendish, Vt.*

Elmer Daniel Kelley, B. S., Franklin Falls. Farmer. *Franklin Falls.*

Alvah Benjamin Morgan, B. S., C naan. Druggist. *Bellows Falls, Vt.*

William Lincoln Whittier, B. S., Deerfield. Farmer. *Deerfield.*

Charles Minot Woodward, B. S., Hanover. Instructor in Agriculture, 1883–'84. Teacher. *Corsicana, Tex.*

12—

1884.

Ernest Smith Cummings, B. S., *Lee. U. S. Signal Service. Died 1886.

Fred Carlos Davis, B. S., South Reading, Vt. Lawyer. *Springfield, Vt.*

Sylvester Miller Foster, B. S., Riverhead, L. I. Insurance Agent. *Riverhead, L. I.*

Herbert Harvey Kimball, B. S., Hopkinton. Weather Bureau. *Washington, D. C.*

Moses Bisbee Mann, B. S., Benton. Custom House Official. *74 Upham St., Malden, Mass.*

George Milton Moore, Plymouth, Vt. Insurance Agent. *Tyson, Vt.*

Ziba Amherst Norris, B. S., Lyme. Merchant. *1677 Washington St., Boston, Mass.*

Edwin Chapin Thompson, B. S., Lee. Weather Bureau. *St. Paul, Minn.*

8—*1

1885.

George Ellsworth Adams, B. S., Weston, Vt. Merchant. *Vernal, Utah.*

Ruel Seabury Alden, B. S., Lyme. Superintendent of College Farm. *Durham.*

Walter Eugene Angier, B. S., C. E. (1887), West Swanzey. Civil Engineer. *Memphis, Tenn.*

Edward Alonzo Bailey, B. S., West Swanzey. Attendant in Insane Asylum. *Winchendon, Mass.*

Phillips Greenleaf Bickford, B. S., Lyme. Teacher. *Farmington, Wash.*

Andrew Walter Brill, B. S., Riverhead, L. I. Seedman and Florist. *Hampstead, Queens Co., N. Y.*

Paul Cuff Brooks, B. S., Boston, Mass. Clerk. *25 Westminster St., Boston, Mass.*

Frank Jay Emerson, B. S., Epping. Clerk. *Portsmouth.*

Allen Hazen, B. S., Hartford, Vt. Consulting Chemist, 85 Water St., Boston, Mass. *Lawrence, Mass.*

George Mayo Mullens, B. S., Londonderry. Farmer. *North Londonderry.*

Albert Henry Wood, B. S., Lebanon. Associate Professor of Agriculture, 1890–'94. Dairy Expert. *Durham.*

11—

1886.

Frank Albert Davis, B. S., South Lee. Weather Bureau. *Boston, Mass.*

James Ellsworth Harvey, B. S., Surry. Photographer. *Charlestown, Mass.*

Belezar Stoianoff Ruevsky, B. S., Sistova, Bulgaria. Veterinary Surgeon. *Sistova, Bulgaria.*

Madison Templeton Thurber, B. S., M. D. (1890), Webster. Physician. *Savin Hill Avenue, Dorchester, Mass.*

Edward Hills Wason, B. S., New Boston. Lawyer. *Nashua.*

George Pillsbury Wood, B. S., Lebanon. Civil Engineer. *Baltimore, Md.*

6—

1887.

William Sprague Currier, B. S., Norwich, Vt. Weather Bureau. *Cleveland, O.*

Arthur Woodbury Hardy, B. S., C. E. (1889), Hopkinton. Civil Engineer. *City Engineer's Office, Salt Lake City, Utah.*

George Albert Sanborn, B. S., Rochester. Teacher. *Rochester.*

Hiram Newton Savage, B. S., White River Junction, Vt. Engineer of San Diego Land Improvement Co. *National City, Cal.*

Bion Leland Waldron, B. S., Strafford. Weather Bureau. *Louisville, Ky.*

1888.

Melvin Burnside Carr, B. S., North Haverhill. With West End Street R. R., General Power Station. *Boston, Mass.*

Herbert Grant Davis, B. S., South Lee. With Thomson-Houston Co. *Lynn, Mass.*

Edwin Chandler Gerrish, B. S., Webster. Civil Engineer. Office of Locks and Canals. *Lowell, Mass.*

William Nelson Hazen, B. S., C. E. (1890), Hartford, Vt. Civil Engineer. *East Berlin, Conn.*

Edward David O'Gara, Hanover. Farmer. *Hanover.*

George Elmer Porter, B. S., M. D. (1892), Hartford, Vt. Physician. *Marengo, Wayne Co., N. Y.*

George Jonathan Sargent, B. S., Canterbury. Civil Engineer. Office of Locks and Canals. *Lowell, Mass.*

John Warren Smith, B. S., Grafton. Weather Bureau. *Boston, Mass.*

George Elwin Walker, B. S., Littleton. Farmer. *Littleton.*

9—

1889.

Fred Harvey Colby, B. S., Hopkinton. Civil Engineer. *Zillah, Yakima Co., Wash.*

Linwood Carroll Gillis, B. S. Editor and Publisher. *Hanover.*

Louis Jerome Hutchinson, B. S. *Norwich, Vt. Electrician. Died, 1895.

John Lawrence Norris, B. S., Lyme. Merchant. *1677 Washington St., Boston, Mass.*

Charles Walter Earl Scott, B. S., Winchester. Clerk. *13 Pearl St., Charlestown, Mass.*

David Elmer Stone, B. S., Hartford, Vt. Mechanic. *Durham.*
Fred Washburn, B. S., West Springfield. Business. *Laconia.*
7—*1

1890.

John Young Jewett, B. S., C. E. (Dartmouth, 1895), Gilford. Civil Engineer. *Lakeport.*
Joseph Franklin Preston, B. S., Hanover. Clerk. *Boston, Mass.*
Elihu Quimby Sanborn, B. S., Webster. Machinist. *Contoocook.*
Clarence Ira Slack, B. S., Norwich, Vt. With Vermont Marble Co. *West Rutland, Vt.*
4—

1891.

Ernest Gowell Cole, B. S., Hampton. Merchant. *Hampton.*
Russell Marden Everett, B. S., Chester. Teacher. *Dover, N. J.*
Edward Payson Stone, B. S., Canaan Centre. Chemist. *Durham.*
3—

1892.

Percy Lovejoy Barker, B. S., C. E. (Dartmouth, 1894), Milford. Civil Engineer. *Waterbury, Conn.*
Fred Driggs Fuller, B. S., Hanover. Assistant in Chemistry. *Worcester, Mass.*
Arthur Bennerzett Hough, B. S., Lebanon. Farmer. *Lebanon.*
Edward Munroe Stone, B. S., C. E. (Dartmouth, 1894), Marlborough. Civil Engineer.
4—

1893.

Wilton Everett Britton, B. S., Keene. Horticulturist, Experiment Station. *New Haven, Conn.*
Frank John Bryant, B. S., Enfield. Teacher. *Enfield.*
Charles Elbert Hewitt, B. S., M. M. E. (Cornell, 1895), Hanover. Electrical Engineer. *Newburgh, N. Y.*
Charles Lincoln Hubbard, B. S., M. E. (1895), Fitzwilliam. Draughtsman. *Providence, R. I.*
Orrin Moses James, B. S., Northwood. Civil Engineer. *Northwood Narrows.*
Arthur Whitmore Smith, B. S., Norwich, Vt. Post Graduate Student. *Wesleyan University, Middletown, Conn.*
6—

1894.

Bert Sargent Brown, B. S., Hanover. Foreman. *St. Johnsbury, Vt.*
Fred Willis Gunn, B. S., Keene. Farmer. *Keene.*
Frederick William Howe, B. S., Hollis. Assistant in Chemistry. *Institute of Technology, Boston, Mass.*
3—

1895.

Frank Stanley Adams, B. S., Gilsum. Editor. *East Greenwich, R. I.*
Frank Clifton Britton, B. S., Keene.
Henry Elmer Hill, B. S., Plainfield, Vt. G.aduate student. *Durham.*
Charles Arthur Trow, Mt. Vernon. Draughtsman, Vermont Machine Co. *Bellows Falls, Vt.*

4—

SUMMARY.

Graduates, 1871–'95, inclusive (living, 149; dead, 8)	157
Agriculturists	29
Architects	2
Business pursuits	42
Chemists	4
Clergymen	2
Civil, Mechanical, and Electrical Engineers	17
Lawyers	5
Manufacturers and Mechanics	10
Physicians	13
Post-Graduate Students	2
Teachers	8
Unclassified	3
Unknown	4
Weather Bureau	7
Twice classified	1
Students October, 1894, to October, 1895	147
Number connected with college, 1871 to 1895, inclusive	431

CALENDAR.

1895.

JULY.

S.	M.	T.	W.	T.	F.	S.
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

AUGUST.

				1	2	3
4	5	6	7	8	9	10
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18	19	20	21	22	23	24
25	26	27	28	29	30	31

SEPTEMBER.

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DECEMBER.

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29	30	31				

1896.

JANUARY.

S.	M.	T.	W.	T.	F.	S.
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MARCH.

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MAY.

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24	25	26	27	28	29	30
31						

JUNE.

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21	22	23	24	25	26	27
28	29	30				

1896.

JULY.

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12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

AUGUST.

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23	24	25	26	27	28	29
30	31					

SEPTEMBER.

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20	21	22	23	24	25	26
27	28	29	30			

OCTOBER.

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18	19	20	21	22	23	24
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NOVEMBER.

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29	30					

DECEMBER.

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6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

COLLEGE CALENDAR.

1895.

September	5.	First term of fifteen weeks began—Thursday morning.
December	18.	First term ends—Wednesday night.

Winter Vacation of Three Weeks.

1896.

January	9.	Second term of ten weeks begins—Thursday morning.
March	19.	Second term ends—Wednesday night.

Spring Vacation of One Week.

March	27.	Third term of ten weeks begins—Thursday morning.
June	1–2.	Examinations for admission, beginning Monday, at 2 p. m.
June	2.	Annual Examinations close—Tuesday noon.
June	2.	Smyth Prize Reading and Speaking—Tuesday evening.
June	3.	Commencement—Wednesday.

Summer Vacation of Thirteen Weeks.

September	1–2.	Examinations for admission—beginning Tuesday, at 9 a. m.
September	3.	First term of fifteen weeks begins—Thursday morning.
December	16.	First term ends—Wednesday night.

Winter Vacation of Four Weeks.

1897.

January	14.	Second term of ten weeks begins—Thursday morning.
March	24.	Second term ends—Wednesday night.

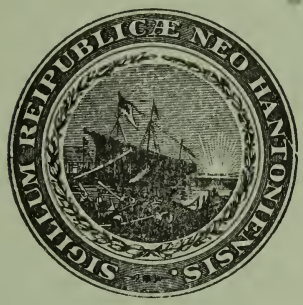
Spring Vacation of One Week.

April	1.	Third term of ten weeks begins—Thursday morning.
June	9.	Commencement—Wednesday.

CATALOGUE

OF THE

New Hampshire College



OF

Agriculture and the Mechanic Arts

1896-97

THE
JOHN CRERAR
LIBRARY.

THOMPSON HALL.

CATALOGUE

OF THE

NEW HAMPSHIRE COLLEGE

OF

AGRICULTURE

AND THE

MECHANIC ARTS

1896-1897

DURHAM
NEW HAMPSHIRE COLLEGE
1896

n 7

PRINTED BY
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CATALOGUE

FOUNDATION AND ENDOWMENT

At the session of the legislature of New Hampshire in 1866, an act was passed establishing the "New Hampshire College of Agriculture and the Mechanic Arts" on the basis of the congressional land grant, and authorizing its location in Hanover and connection with Dartmouth College.

In accordance with this act, the institution was organized under a board of trustees, appointed partly by the governor and council and partly by the corporation of Dartmouth College.

The act of congress, by virtue of which it was established, provides that its "leading objects shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts . . . in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

An act of congress, approved August 30, 1890, provides an additional appropriation, which for the current year is twenty-two thousand dollars, and which is to be increased until it becomes twenty-five thousand dollars a year. This money is to be applied "to instruction in Agriculture, the Mechanic Arts, the English Language, and the various branches of Mathematical, Physical, Natural, and Economic Science, with special reference to their applications in the industries of life, and to the facilities for such instruction."

At the session of the legislature of New Hampshire in 1891, acts were passed severing the connection with Dartmouth College and removing the New Hampshire College from Hanover to Durham; accepting the Benjamin Thompson estate, which was then of the value of about four hundred thousand dollars,

and which, accumulating at four per cent. compound interest, will be available as an endowment in 1910; and providing one hundred thousand dollars to be used with certain other sums in the erection of buildings.

At the session of the legislature of New Hampshire in 1893, an act was passed appropriating thirty-five thousand dollars for completing and furnishing the buildings. These buildings have been finished, furnished, and supplied with apparatus. The New Hampshire College has completed the third year of work in its new location.

The college is carrying out the provisions of the acts of congress, by giving a practical and scientific education, which is of use in all the professions and industrial pursuits, by means of the following courses of study:

1. Courses in Agriculture:
   - A. Four Years' Course.
   - B. Two Years' Course.
   - C. Ten Weeks' Winter Course.
   - D. Four Weeks' Dairy Course.
   - E. Non-resident Course.

2. Courses in the Mechanic Arts:
   - A. Mechanical Engineering Course.
   - B. Electrical Engineering Course.
   - C. Technical Chemistry Course.

3. General Course.
4. Summer School of Biology.

FACULTY

CHARLES S. MURKLAND, A. M., Ph. D., *President, and Professor of English Language and Literature.*

CHARLES H. PETTEE, A. M., C. E., *Dean and Professor of Mathematics and Civil Engineering.*

CLARENCE W. SCOTT, A. M., *Professor of History and Political Economy.*

FRED W. MORSE, B. S., *Professor of Organic Chemistry.*

CHARLES L. PARSONS, B. S., *Professor of General and Analytical Chemistry.*

CLARENCE M. WEED, D. Sc., *Professor of Zoölogy and Entomology.*

ALBERT KINGSBURY, M. E., *Professor of Mechanical Engineering.*

FRANK WILLIAM RANE, B. Ag., M. S., *Professor of Agriculture and Horticulture.*

HOLLIS F. CLARK, 2nd Lieut. 23rd U. S. Infantry, *Professor of Military Science and Tactics.*

HERBERT H. LAMSON, M. D., *Instructor in Botany.*

ARTHUR F. NESBIT, A. M., B. S., *Instructor in Physics and Electrical Engineering.*

CHARLES H. KINNE, Ph. D., *Instructor in Modern Languages.*

JOSEPH H. HAWES, *Instructor in Drawing and Mathematics.*

ERNEST B. MacCREADY, B. S., *Instructor in Chemistry.*

JOHN N. BROWN, *Foreman of Machine Work.*

EDWARD E. RUSSELL, *Engineer and Curator of Buildings.*

RUEL S. ALDEN, B. S., *Farm Superintendent.*

LEIGH HUNT, B. S., *Assistant Horticulturist, Experiment Station.*

CHARLES D. HOWARD, B. S., *Assistant Chemist, Experiment Station.*

GEORGE H. FURBISH, *Foreman of Wood Work.*

CLEMENT S. MORRIS, *Purchasing Agent.*

Mrs. M. E. WIGGIN, *Matron of Thompson House.*

STUDENTS

a—Agricultural Course; *c*—Course in Technical Chemistry; *e-ε*—Electrical Engineering Course; *g*—General Course; *m-e*—Mechanical Engineering Course. Sophomores and Juniors in the Engineering Courses are designated by *e* only. Freshmen are not classified in courses.

SENIORS

Name.	Residence.	Room.
Bartlett, Carrie Augusta *g*	*Lee.*	Thompson House.
Bartlett, Mary Blaisdell *g*	*Epping.*	Thompson House.
Buck, Walter French *e*	*Manchester.*	DeMerritt Hall.
Colburn, Arthur Willard *a*	*Dracut, Mass.*	Q. T. V. Hall.
Comings, Carrie Lydia *g*	*Durham.*	Mrs. Davis's.
Comings, Mary Elizabeth *g*	*Durham.*	Mrs. Davis's.
Dennett, Irving Lyford *m e* *	*Barnstead.*	Mr. Charles Hoitt's.
Forristall, Elwin Henry *a*	*Colebrook.*	Q. T. V. Hall.
Hancock, Edward H. *m e* *	*Newton.*	Hoitt House.
Hayes, Leslie David *m e*	*Durham.*	Mr. Hayes's.
Hunt, John Norton *m e*	*Peterborough.*	Q. T. V. Hall.
Jenkins, Ellery Dunbar *a*	*Lee.*	Mr. E. E. Jenkins's.
Mason, Woodruff *c*	*Durham.*	Prof. Kingsbury's.
Shaw, Roscoe Hart *c* *	*Milton.*	Mrs. Davis's.
Vickery, Charles William *c*	*Dover.*	Mr. A. Meserve's.
Wheeler, Delbert Amos *a*	*So. Ashburnham, Mass.*	Hoitt House.
Whittemore, Everett Sidney *a*	*Colebrook.*	Q. T. V. Hall.

JUNIORS

Bunker, Mabel Eliza *g* *	*Durham.*	Mr. J. J. Bunker's.
Butterfield, Richard Cole *a*	*Westmoreland.*	Q. T. V. Hall.
Buzzell, Helen *g* *	*Lee.*	Lee.
Caverno, Bernice Elizabeth *	*Durham.*	Mr. Caverno's.
Chase, Frank Rufus *a* *	*Epping.*	Thompson Hall.
Corbett, Burton Albert *a*	*Colebrook.*	Q. T. V. Hall.
Durgin, Alfred Caverly *e*	*Lee.*	Lee.
Foord, James Alfred *a*	*Walpole.*	Nesmith Hall.
Fullerton, John William *e*	*Somersworth.*	Q. T. V. Hall.
Given, Arthur *c*	*Durham.*	Mr. A. Meserve's.

* Partial course.

Name.	Residence.	Room.
Haley, John Myron *a* *	*Dover.*	123 Portland St., Dover.
Hayes, Mabel Lucy *g*	*Durham.*	Mr. Hayes's.
Hirokawa, Tomokichi *e*	*Imabari, Japan.*	Prof. Pettee's.
Mathes, Harry Clinton *a* *	*Newmarket.*	Q. T. V. Hall.
Moore, Herbert Fisher *e*	*Penacook.*	Q. T. V. Hall.
Morgan, Gerry Austin *e*	*Goffstown.*	DeMerritt Hall.
Richardson, Harry Putnam *a*	*Milford.*	DeMerritt Hall.
Sanborn, Fred Dexter *e*	*Ashland.*	Q. T. V. Hall.
Shaw, Elijah Ray *a* *	*Nashua.*	Hoitt House.
Smith, Fred Webster *a*	*Franklin Falls.*	Mr. Charles Hoitt's.
Straw, Edson Albert *e*	*Pittsfield.*	Mr. Caverno's.
Tolles, Benjamin D. *e*	*Somersworth.*	Q. T. V. Hall.

SOPHOMORES

Andrews, Herbert Prescott *e**	*Hollis.*	Thompson Hall.
Baker, Frank Loren *e*	*So. Yarmouth, Mass.*	Pres. Murkland's.
Baker, Henry Clark *e*	*So. Yarmouth, Mass.*	Mr. Furbish's.
Barnard, Harry Everett *a*	*Nashua.*	Burnham House.
Clement, Harrison Edward *e*	*Nashua.*	Burnham House.
Cobb, Walter Knight *e**	*Westmoreland.*	Q. T. V. Hall.
Colby, Irving Atwell *e*	*Exeter.*	Mr. Hayes's.
Demeritt, Edith Augusta *g**	*Durham.*	Mr. Demeritt's.
Demeritt, George Stickney *e**	*Dover.*	Mr. A. Meserve's.
Foss, Edna Ethel *g*	*Durham.*	Mr. Foss's.
Gordon, Arthur Gilbert *e*	*Reed's Ferry.*	Mr. A. Meserve's.
Hayden, Willis Daniel Farley *e*	*Hollis.*	DeMerritt Hall.
Hayes, Clarence Morrill *e*	*Milton.*	Q. T. V. Hall.
Hayes, Fred Frost *e**	*Portsmouth.*	Mr. A. Meserve's.
Hunt, William Elmer *c*	*Nashua.*	Burnham House.
Jenkins, Evelyn *g*	*Lee.*	Lee.
Kenney, Lewis Hobart *e*	*Pownal, Me.*	Q. T. V. Hall.
Ladd, Samuel Tilton *e*	*Epping.*	Mr. Charles Hoitt's.
Norcross, Arthur Zebulon *a*	*Rindge.*	Burnham House.
Philbrick, John *e*	*Seabrook.*	DeMerritt Hall.
Putney, Harry Nelson *e*	*Franklin.*	Hoitt House.
Simpson, Etta Lillian *g*	*Durham.*	Mr. Simpson's.
Wilson, John Ernest *e*	*Hollis.*	DeMerritt Hall.

FRESHMEN.

Bracy, William Hayes	*Somersworth.*	Prof. Rane's.
Burnham, Fanny	*Durham.*	Mr. J. W. Burnham's.
Chandler, Frank Hebor	*New Boston.*	DeMerritt Hall.
Doe, Helen	*Salmon Falls.*	Salmon Falls.

* Partial course.

Name.	Residence.	Room.
Foye, Blanche Mary	*Durham.*	Prof. Weed's.
Horton, Frederic Libbey	*Dover.*	Mr. A. Meserve's.
Langelier, Joseph Alphonse	*Nashua.*	DeMerritt Hall.
Leavitt, Mabel Augusta	*West Stockbridge, Mass.*	Prof. Wood's.
Mark, Grace Agnes	*Gilsum.*	Thompson House.
Mathes, Charles Eliot Page	*Durham.*	Mr. Mark Mathes's.
Penneo, George Jay	*Hampstead.*	Mrs. Davis's.
Pettee, Alvena	*Durham.*	Prof. Pettee's.
Plummer, Bard Burge, Jr.	*Milton.*	Mrs. Davis's.
Rane, John Connelly	*Whitmore Lake, Mich.*	Prof. Rane's.
Robertson, Marie Livingston	*Galeton, Penn.*	Prof. Parsons's.
Runlett, Harold Morrison	*Durham.*	Mr. Runlett's.
Shipley, Walter Noah	*Nashua.*	Burnham House.
Stillings, Charles Edwin	*Somersworth.*	Mr. Hayes's.
True, Clarence Merrill	*Amesbury, Mass.*	Q. T. V. Hall.
Twombly, Winfield Hancock	*Madbury.*	Hoitt House.
Willard, Charles Franklin	*Marlboro, Mass.*	Q. T. V. Hall.
Wright, Robert Morrill	*Hill.*	Q. T. V. Hall.

GRADUATE STUDENTS

Name.	Residence.	Subjects.
Crossman, Ralph Wallace, A. B.	*Medway, Mass.*	Biology.
Trow, Charles Arthur, B. S.	*Mont Vernon.*	Assaying.

SPECIAL STUDENTS

Smith, Jennie S.	*Newmarket.*	Biology.
Wentworth, Charles	*Durham.*	Political Science.

TWO YEARS' COURSE IN AGRICULTURE

SECOND YEAR.

Name.	Residence.	Room.
Stratton, Lyman Charles	*Hollis.*	Burnham House.

FIRST YEAR.

Buzzell, Maurice Tuttle	*Lee.*	Mr. Buzzell's.
Caldwell, Frank Irving	*Lee.*	Mr. W. S. Caldwell's.
Harris, Vincent Colby	*Etna.*	Burnham House.
Jefts, Eugene Roberts	*Marlow.*	Hoitt House.
Martin, Charles Wesley	*Durham.*	Mr. Hunt's.
Weeks, William Robinson	*Greenland,*	Mrs. Weeks's,
Wheeler, George Henry	*Temple.*	Prof. Scott's.

SUMMER SCHOOL OF BIOLOGY

Name.	Residence.
Bement, Mabel L.	*Somerville, Massachusetts.*
Coleman, Dorothy	*Newington, New Hampshire.*
Dean, Harold M.	*Webster, Massachusetts.*
Ham, Judson B.	*Johnson, Vermont.*
Ham, Mrs. Judson B.	*Johnson, Vermont.*
Plummer, Lucia C.	*Milton, New Hampshire.*
Richards, Mary Etta	*Wilmot, New Hampshire.*
Swain, J. Mamie	*New Hampton, New Hampshire.*
Wiggin, Elizabeth	*Durham, New Hampshire.*

NON-RESIDENT COURSE IN AGRICULTURE

Adams, Charles L.	*East Providence, Rhode Island.*
Ballinger, Ellis G.	*East View, Virginia.*
Bridges, W. A.	*Foxcroft, Maine.*
Chamberlin, S. M.	*Woodsville, New Hampshire.*
Costen, S. J.	*Cheapside, Virginia.*
Cunningham, T. J.	*Hampton, Virginia.*
Doe, Catherine	*Salmon Falls, New Hampshire.*
Dunham, G. Burton	*Boston, Massachusetts.*
Fay, David E.	*South Deerfield, Massachusetts.*
Fernald, William L.	*Eliot, Maine.*
Gardner, James P., Jr.	*Brooklyn, New York.*
Gilpatric, Winifred W.	*Bridgewater, New Hampshire.*
Glover, B. M.	*Exeter, New Hampshire.*
Guthrie, Samuel J.	*St. Louis, Missouri.*
Hill, D. H.	*South Lee, New Hampshire.*
Jamieson, William	*St. Louis, Missouri.*
Killough, Harry	*Richmond, Kansas.*
Kelly, J. J.	*Brandonville, West Virginia.*
Munroe, Albert F.	*East Providence, Rhode Island.*
Nichols, Andrew, Jr.	*Bridgewater, New Hampshire.*
Osborne, Alfred	*North Weare, New Hampshire.*
Prindle, Harry Edward	*New York, New York.*
Purinton, A. A.	*Nashua, New Hampshire.*
Robb, George	*Yonganoxie, Kansas.*
Sanford, S.	*Portsmouth, Rhode Island.*
Scott, Walter C.	*Rockville Center, New York.*
Stoneroad, V. D.	*Leonardstown, Maryland.*
Turner, Ambrose Nelson	*Salem, New Hampshire.*
Upham, Warren J.	*Weston, Massachusetts.*

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ADMISSION

Candidates for the first year must present testimonials of good moral character, and must pass an examination in the following subjects:

a. Arithmetic, including the metric system.
b. Algebra, to quadratics.
c. Plane Geometry.
d. Physical Geography.
e. American History.
f. English.

It is recommended that the preparation also include Myers's General History or an equivalent.

In English, the examination will consist in the criticism of specimens of incorrect English, together with a short essay, correct in spelling, punctuation, division into paragraphs, grammar and expression, on a subject to be announced at the time of the examination. In 1897, the subject will be taken from one of the following books: Shakespeare's Merchant of Venice, and As You Like It; Scott's Marmion; Longfellow's Evangeline; Burke's Speech on Conciliation with America; Macaulay's Life of Samuel Johnson; DeFoe's History of the Plague in London; Irving's Tales of a Traveler; Hawthorne's Twice-Told Tales; George Eliot's Silas Marner.

In 1898, Shakespeare's Merchant of Venice, and Julius Cæsar; Goldsmith's Deserted Village; Scott's Marmion; Longfellow's Courtship of Miles Standish; Burke's Speech on Conciliation with America; Macaulay's Life of Samuel Johnson; DeFoe's History of the Plague in London; Hawthorne's Twice-Told Tales; Thackeray's Newcomes; George Eliot's Silas Marner.

In 1899, Shakespeare's Merchant of Venice, and Twelfth Night; Goldsmith's Deserted Village; Scott's Lady of the

Lake; Longfellow's Courtship of Miles Standish; The Sir Roger de Coverley Papers; Burke's Speech on Conciliation with America; Macaulay's Essay on Lord Clive; Scott's Old Mortality; Hawthorne's House of Seven Gables; Thackeray's Newcomes.

Students are advised to prepare themselves thoroughly in all the required subjects, and especially in English, since no college can be expected to admit students who cannot write their own language with neatness, clearness, and an approach to accuracy.

They are further recommended not to limit their preparation to these requirements. The excellent academies and high schools of New Hampshire put within their reach a preliminary training which will add greatly to the value of a college course.

Candidates for advanced standing are also examined in the studies that have been pursued by the class which they propose to enter.

A certificate from any academy or high school will be accepted in place of an examination, upon any subject required for admission to the first year. Every certificate must state the amount of work done by the student, his proficiency, and the text-books used; and in case it is not evident that the student is thoroughly prepared, an examination will be required.

Certificate forms will be furnished on application.

The times for examination are the Monday afternoon and Tuesday before Commencement, and the Tuesday and Wednesday before the beginning of the first term. Candidates will first present themselves with their credentials on the first day of the examination. See Calendar.

DESCRIPTION OF STUDIES

For the Courses of Study see page 31 et seq.

AGRICULTURE AND HORTICULTURE.

1. Chemistry of Plant Growth. *Thirty exercises.*

The composition of plants at different stages of growth, and the conditions necessary for their development. This subject must be preceded by Chemistry courses 1, 2, 3, and 4.

2. Pomology and Viticulture. (Fruit growing.) *Twenty exercises.*

References: Downing's Fruit and Fruit Trees of America; Thomas's American Fruit Culturist; Warden's Pomology; Barry's Fruit Garden; Fuller's Small Fruit Culturist, etc.

3. Food and Nutrition. *Twenty exercises.*

These subjects include the composition of foods, and the animal body; the assimilation of the former by the latter, and the principles underlying a rational diet. This subject should be preceded by Course 1.

4. Stock Feeding. *Ten exercises.*

This course is taken simultaneously with Course 3, by the students in agriculture. It deals with the practical application of the principles of nutrition to the feeding of domestic animals, and consists of ten lectures, and forty hours' practical work.

5. Arboriculture and Forestry. *Ten exercises.*

The use of trees for shelter, shade, and ornament; and their propagation. Values of trees for timber; how to improve existing woodlands; influence of forests upon soils, crops, and climate; establishment and management of plantations of forest trees, etc.

6. Floriculture and Landscape Gardening. *Twenty exercises.*

Lectures and recitations. References: Henderson's Practical Floriculture; Long's Ornamental Gardening; Downing's Landscape Gardening; and various special works and special pamphlets.

7. Soils and Fertilizers. *Thirty exercises.*

The course deals with the relations of soils and fertilizers to each other and to plants.

8. Olericulture and Seed Growing. (Vegetable Gardening.) *Twenty exercises.*

Lectures and recitations. References: Henderson's Gardening for Profit; Brill's Seed Growing; and various special works.

9. Comparative Anatomy of Domestic Animals. *Thirty exercises.*

Lectures and recitations.

10. Dairying. *Twenty exercises.*

This course consists of practical and theoretical instruction in methods of modern dairying, including the general management of the dairy, the methods of milk analysis, the bacteriology of the dairy, the use of separators, the making of butter, and preparation of milk for the city market.

11. Domestic Animals. (Breeds and Breeding.) *Twenty exercises.*

Lectures and recitations. References: Mile's "Stock Breeding," and Curtis's "Horses, Cattle, Sheep, and Swine," etc.

12. Dairy Chemistry. *Fifteen exercises.*

This course consists of lectures and recitations upon the chemistry of milk, butter, and cheese.

13. Agricultural Seminary.
a. Thirty exercises. b. Ten exercises. c. Thirty exercises.

Discussion of current agricultural literature and experiment station bulletins.

14. Practical work.

During the last two years of the course, ten hours per week is required in practical work, either on the farm or in the garden and nursery during the fall and spring; and in the barn, greenhouse, carpenter shop or machine shop during the winter. The object of this work is to familiarize the student with the application of a theoretical training. During the last, or senior year, most of this time can be taken up for thesis work, in which some original investigation is carried on, the results being presented for the graduating thesis, which may be published, if of sufficient interest.

BOTANY

1. Introductory Botany. *Fifty exercises.*

A general introduction to the study of plants by means of laboratory work and lectures, beginning with the lower forms.

2. Structural Botany. *Thirty exercises.*

Lectures and laboratory work on the minute structure and physiology of plants, with special reference to the higher forms.
Open only to those who have taken Course 1.

3. Plant Diseases. *Thirty exercises.*

A study by means of lectures and laboratory work of some of the more important fungous diseases of cultivated plants, and the means of preventing their injuries.
Open only to students who have completed Botany 1 and 2.

CHEMISTRY

1. Inorganic Chemistry. *Forty-five exercises.*

Lectures and recitations on general theoretical chemistry, illustrated by experiments, charts, specimens, lantern views, etc. Solutions of chemical problems will be required.

2. Inorganic Chemistry. *Thirty exercises.*

Course 2 is a continuation of Course 1, but the time will be spent mainly on the metallic elements, their metallurgy, salts, etc.
Open only to students who have completed Course 1.

3. Organic Chemistry. *Twenty exercises.*

Course 3 will consist of lectures and recitations on the chemistry of the carbon compounds, together with the study of their properties by means of specimens.
Open only to students who have completed Course 1.

4. Organic Chemistry. *Twenty exercises.*

Course 4 is a continuation of Course 3, and must be preceded by it.

5. Qualitative Chemical Analysis.

Course 5 consists of laboratory practice, with occasional lectures. The student is expected to become proficient in the separation and detection of the common acids and bases, and to keep a full set of

notes. He will have practice in the writing of reactions, and will fill out numerous slips containing questions bearing upon his work.

Open only to students who have completed Courses 1 and 2.

6. Qualitative Analysis completed and Quantitative Analysis begun. *Course extends through two terms.*

The work in quantitative analysis will be, in the main, elementary and preparatory for advanced work.

Open to those who have completed Course 5.

7. Applied or Industrial Chemistry.

a. Twenty exercises. b. Twenty exercises.

Course 7 consists of lectures on chemical manufactures, such as iron, steel, sugar, salt, sodium carbonate, fertilizers, sulphuric acid, glass, matches, paints, dyes, soaps, illuminating gas, petroleum, etc. The lectures will be illustrated by lantern views; and trips to the leading New England cities, to examine important chemical manufactures, will be taken as far as practicable.

Open only to those who have completed Courses 1, 2, 3, and 4.

8. Advanced Quantitative Analysis.

Course 8 extends through the year, and is intended to fit the student for work in the laboratories of agricultural experiment stations, fertilizer works, iron-works, sugar refineries, etc.; and for the duties of the public analyst. The course will be made to fit the end which each has in view, and will be largely an individual one. For those students in the Chemical Division of the Agricultural Course the analyses made will tend in the main toward agricultural products, fertilizers, mucks, marls, manures, dairy products, waters, food-stuffs, sugars, etc. For the student wishing to enter metallurgical works, the analyses will be in the main upon iron, steel, and other metals, ores, limestone, slags, alloys, fuels, etc. As a preparation to the study of medicine, work will be done on poisons, foods, drugs, urine, etc. Other lines will be arranged to meet the wants of the individual student. Each student will be given some practice in all of the branches of agricultural, metallurgical, medical, sanitary, and industrial chemistry, in order to lay a foundation for any future work which may be required of him. A short course in gas analysis will also be provided. A portion of the time of the last two terms is given to work bearing upon the preparation of a graduating thesis.

Open to students who have completed Course 6.

9. Organic Chemistry. *Thirty exercises.*

Course 9, for students in the Chemical Division of the Agricultural Course, and in the Technical Chemistry Course, consists of laboratory

practice by the students in preparing and purifying products relating to their respective lines of work.

Open to those who have completed Courses 3 and 4.

10. Chemical Journals, Methods, etc. *Thirty-five exercises.*

The work consists of the study of current chemical literature, which is mainly in the German language, with recitations once a week throughout the year. Each student will be expected to prepare abstracts, reports, criticisms, etc., upon assigned articles.

Open to students taking Course 8.

11. Chemical Philosophy. Lectures and Recitations.
a. Twenty exercises. *b. Twenty exercises.*

The work consists of advanced study of chemical theory. Practical experiments will be performed, with the aid of the student, in the determination of vapor density, molecular weights, specific heat, etc.; and the study of isomorphism, diffusion of gases, solutions, molecular and atomic volume, etc., will take up much of the time.

Course 11 comes in alternate years with Course 7, and is open to students who have completed Courses 1, 2, 3, and 4.

DRAWING

Two and one-half hours' work is reckoned as one exercise.

1. Freehand Drawing.
a. Thirty exercises. *b. Twenty exercises.*

The course includes outline drawing from models and from groups of common objects, light and shade drawing from models and from casts of historic ornament; the principles of perspective; elementary design; machine sketching and the use of instruments.

2. Advanced Freehand drawing. *Twenty exercises.*

This course includes drawing from the cast and from still life with charcoal and stump; pencil sketching; the use of water color; design.

3. Descriptive Geometry and Drawing.
a. Fifty exercises. *b. Thirty exercises.*

Recitations and drawing exercises in the solution of problems in plane and solid geometry by means of orthographic projections.

Course 3 is open only to those who have taken Mathematics 2.

4. Mechanical Drawing.
a. Twenty exercises.

Recitations on shades and shadows and perspective, with exercises in perspective drawing and line shading.

b. Thirty exercises.

Exercises in making dimension drawings for the use of workmen; tracing and blue-printing.

5. Advanced Freehand Drawing and History of Art.

a. Thirty exercises. b. Twenty exercises. c. Twenty exercises.

This course continues throughout the year and includes the drawing of antique figures from casts, anatomical details, advanced perspective, pencil sketching, water color and recitations.

ENGINEERING

1. Surveying. *Fifty exercises.*

Recitations, field work, and plotting, including compass, transit, plane-table, and level work.

2. Mechanism. *Seventy-five exercises.*

Recitations, and exercises in drawing outlines of elementary combinations of parts of machines, with special reference to the relative motion of the parts, their forms and modes of connection.

Course 2 is open only to those who have taken Drawing 3.

3. Mechanics of Engineering.

a. Fifty exercises. b. Fifty exercises.

Course 3 a and the first half of Course 3 b are devoted to recitations in Statics and Dynamics, the latter half of Course 3 b to Mechanics of Materials.

Course 3 is open only to those who have taken Course 2 and Mathematics 6.

4. Materials of Construction. *Sixty exercises.*

Recitations on the production, properties, uses, and preservation of engineering materials.

Course 4 is open only to those who have taken Course 3 b and Chemistry 2.

5. Thermodynamics.

a. Forty-five exercises. b. Thirty exercises.

Course 5 is open only to those who have taken Course 3 a and Physics 1.

6. Heat Motors and Refrigerating Machinery.

Thirty exercises.

Course 6 is open only to those who have taken Course 5.

7. Construction and Theory of Dynamos and Electro-motors. *Forty-five exercises.*

Lectures and quizzes.

Course 7 is open only to those who have taken Physics 4 to 6 and Mathematics 5 and 6.

8. Work in Mechanical Laboratory.

a. and *b.* Tests of Materials.

a. Thirty exercises. *b. Thirty exercises.*

c. Tests of Boilers and Engines. *Twenty exercises.*

Courses 8 a and 8 b are open only to those who have taken Course 3 b. Course 8 c is open only to those who have taken Course 5.

9. Machine design. *Forty exercises.*

Course 9 is open only to those who have taken Courses 3 and 4.

10. Applications of Electricity.

a. Forty exercises. *b. Thirty exercises.*

Lectures and recitations.

Course 10 is open only to those who have taken Physics 1, 2, and 3.

11. Roads, Streets, and Pavements. *Twenty exercises.*

Recitations and lectures on construction and maintenance of paved, macadamized, and gravel roads, with discussion of laws relating thereto.

ENGLISH

1. Rhetoric.

a. Thirty exercises. *b. Twenty exercises.* *c. Twenty exercises.*

2. Three Themes. *One each term.*

Required of all students registered in the Sophomore Class.

3. Three Original Declamations. *One each term.*

Required of all students registered in the Junior Class.

4. Three Original Declamations. *One each term.*

Required of all students registered in the Senior Class.

5. Early English. *Forty-five exercises.*

Study of authors.

6. Elizabethan Writers. *Thirty exercises.*

Study of authors.

7. Writers of the Restoration and the French Influence. *Thirty exercises.*

8. Victorian Writers. *Twenty exercises.*

9. English Romance. *Thirty exercises.*

10. American Literature. *Thirty or fifty exercises.*

Lectures and study of authors.

11. Study of Words. *Thirty exercises.*

12. Advanced Rhetoric. *Twenty exercises.*

FRENCH

1. French Grammar. *Forty-five exercises.*

Pronunciation; dictation; oral drill; translation.

2. French Reader. *Thirty exercises.*

Easy selections from French authors; irregular verbs.

3. Readings from French History. *Thirty exercises.*

Study of the more common and essential points of French syntax.

4. Writers of the Nineteenth Century. *Forty-five exercises.*

Feuillet, Mérimée, About; special attention to French idioms.

5. The Modern Drama. *Thirty exercises.*

Scribe, Victor Hugo; Sandeau; the text will be made the basis of exercises in conversation.

6. French Prose of Popular Science. *Thirty exercises.*

The aim is to increase the student's vocabulary of practical, if not strictly scientific, subjects.

GEOLOGY

1. Elementary Geology. *Thirty exercises.*

2. Mineralogy. *Thirty exercises.*

A short course in blowpipe analysis, followed by laboratory practice in the determination and study of minerals, with special reference to their economic value.

Course 2 is open only to students who have taken Chemistry 1 and 2.

GERMAN

1. German Grammar. *Forty-five exercises.*

Declension of nouns and adjectives; regular and irregular verbs; oral drill; written exercises.

2. Readings for Beginners. *Thirty exercises.*

Carefully-graded selections of such a character as to gradually meet and master the difficulties of German syntax.

3. Contemporary Writers. *Thirty exercises.*

Variety of vocabulary, and the mastery of the more common idioms, will be the aim of this Course.

4. German Plays. *Forty-five exercises.*

The selections chosen will be made the basis of colloquial drill.

5. Masterpieces of German Literature. *Thirty exercises.*

Goethe, Schiller, Lessing.

6. Scientific German. *Thirty exercises.*

The purpose of the Course is to familiarize the student with the vocabulary of scientific investigation.

HISTORY

In the work in history, special attention is paid to the development of those arts and institutions which have had the most important influence upon later history.

In the advanced courses, considerable time is given to historical reading and to written work.

1. Grecian History. *Forty-five exercises.*

2. Roman History. *Thirty exercises.*

3. Mediæval History. *Thirty exercises.*

4. Modern History to the French Revolution. *Forty-five exercises.*

5. European Political History since the beginning of the French Revolution. *Thirty exercises.*

6. American History to 1789. *Thirty exercises.*

7. American Political History since 1789. *Forty-five exercises.*

MATHEMATICS

1. Higher Algebra. *Ninety exercises.*

2. Solid Geometry, with advanced course. *Sixty exercises.*

3. Plane and Spherical Trigonometry. *Sixty exercises.*

4. Analytic Geometry. *Seventy-five exercises.*

5 *a*. Differential Calculus.
5 *b*. Integral Calculus. } *One hundred exercises.*

6. Astronomy. *Thirty exercises.*

METEOROLOGY

1. Meteorology. *Twenty exercises.*

Recitations and lectures on wind systems, precipitation, humidity, laws of storms and tornadoes, and methods of prediction of atmospheric changes.

MILITARY SCIENCE AND TACTICS

1. Military Drill.

Practical instruction in drill and gymnastic exercises.

Four exercises per week throughout the Freshman, Sophomore, and Junior years; elective in the Senior year.

2. Military Tactics.

Theoretical instruction in drill regulations and the elementary principles of military science.

One exercise per week throughout the Freshman, Sophomore, and Junior years.

PHILOSOPHY

1. Logic. *Thirty exercises.*

Lectures and recitations.

2. Psychology. *Forty-five exercises.*

3. Ethics. *Thirty exercises.*

Lectures and recitations.

PHYSICS

1 *a*. Mechanics.
1 *b*. Heat. } *Forty-five exercises.*

2 *a*. Light.
2 *b*. Sound. } *Thirty exercises.*

3. Electricity and Magnetism. *Thirty exercises.*

Courses 1, 2, and 3 are a general introduction to the subject. The instruction is given by recitations and lectures, the latter being illustrated by experiments and stereopticon. Notes on lectures and experiments are submitted by each student.

4. Laboratory Work in Mechanics and Heat.
Forty-five exercises.

5. Laboratory Work in Heat and Light. *Thirty exercises.*

6. Laboratory Work in Electricity and Magnetism.
Thirty exercises.

The work consists in the experimental verification of the laws of physics and the determination of physical constants; for example, the student will by experiments investigate the intensity of gravity, coefficients of friction, the analytical balance, elasticity of wires, specific heats, laws of radiation and absorption of heat, candle power of lights, dip, declination, and intensity of the earth's magnetism, laws of electric currents, of electro-magnets, etc. A systematic and carefully-written report on each experiment is required.

Courses 4, 5, and 6 are taken consecutively and are open only to those who have passed in Courses 1, 2, and 3. Students in Engineering must also have passed in Mathematics 1 to 6.

7. Electrical and Photometrical Measurements.
a. Fifteen exercises. *b. Fifteen exercises.*

The work consists in the measurement by various methods of current, resistances, and E. M. F., and in photometric study of arc and incandescent lamps.

Course 7 is open only to those who have passed in Courses 4, 5, and 6.

8. Experimental work on the efficiency, characteristic curves, and curves of potential of dynamos and motors. *Twenty exercises.*

Course 8 is open only to those who have passed in Physics 7 and Engineering 7.

POLITICAL SCIENCE

1. Political Economy. *Fifty exercises.*

A course in Walker's Political Economy, with lectures upon some of the practical questions of the day.

2. Laws of Business. *Thirty-three exercises.*

Recitations supplemented by lectures and the discussion of cases.

3. American Constitutional Law. *Forty-two exercises.*

Use is made of Pomeroy's Constitutional Law, which is brought up to date by means of the decisions of the United States Supreme Court. Special attention is given to the connection between American constitutions and American political history.

4. Advanced Political Economy. *Thirty exercises.*

A consideration of such subjects as banking, bimetallism, and tariff legislation.

Open only to those who have taken Course 1.

5. Advanced Political Economy, or Social Science. *Thirty exercises.*

Open only to those who have taken Courses 1 and 4.

SHOP WORK

Three hours' work in the shops is reckoned as one exercise.

1. Work in Wood Shop.

Exercises in carpentry, joinery, and pattern making.

a. *Forty-five exercises.* *b.* *Thirty exercises.*
c. *Thirty exercises.* *d.* *Forty-five exercises.*
e. *Thirty exercises.* *f.* *Thirty exercises.*

2. Work in Machine-shop.

Exercises in bench work, machine work, and shop measurements.

a. *Thirty exercises.* *b.* *Twenty exercises.*
c. *Twenty exercises.* *d.* *Forty-five exercises.*
e. *Thirty exercises.* *f.* *Thirty exercises.*

ZOÖLOGY

1. Introductory Zoölogy. *Thirty exercises.*

A general introduction to the study of animal life, by means of lectures and laboratory dissections of the principal types.

2. Animal Biology. *Twenty exercises.*

A general study of the nature and processes of animal life, with especial attention to heredity, variation, development, and mental powers.

Open to students who have taken Course 1.

3. Entomology. *Thirty exercises.*

A review of the classification, structural characters, and biological relations of insects, with a special study of those injurious to cultivated crops and domestic animals, and of the means of preventing their injuries.

Open only to those who have taken Courses 1 and 2.

4. Economic Ornithology. *Fifteen exercises.*

Lectures on the relations of birds to agriculture, and their relations to each other and to other organisms.

Course 4 is open only to students who have taken Courses 1, 2, and 3.

5. Advanced Zoölogy.

Averaging four exercises a week for a year.

Course 5 is intended for those students who elect Zoölogy for their Senior year. It will usually be modified to suit individual needs. Open only to those who have completed all preceding courses.

6. Zoölogical Bibliography. *One hour a week for a year.*

Open only to students taking Course 5.

COURSES OF STUDY

AND SCHEDULE OF HOURS

For Details, see Description of Studies.

Chapel exercises: 11:45 daily, except that on Sundays the exercises are held at 5 p. m. Attendance is required of all students.

Military Drill: Military Science 1. M., T., Th., F., 12 to 12:30. Attendance is required of all students, except in the Senior year, in which the drill is elective.

Rhetoricals: Wednesdays, 12 to 12:30. Attendance is required of all students.

FRESHMAN YEAR.

For all Four-Year Courses.

FIRST TERM.

		Exercises per week.
Rhetoric—English 1 a	Div. I. W. F. 9 Div. II. W. F. 8	2
Algebra — Mathematics 1 and 2	Div. I. M. T. W. Th. F. S. 10. Div. II. M. T. W. Th. F. S. 11.	6
*Shopwork—Shopwork 1 a	Div. I. M. T. W. 1:30 to 4. Div. II. W. Th. F. 1:30 to 4.	2½
Freehand Drawing—Drawing 1 a	Div. I. W. Th. F. 1:30 to 4. Div. II. M. T. W. 1:30 to 4.	2½
Grecian History—History 1 or *French—French 1	T. Th. S. 8. T. Th. S. 9.	3
Military Tactics—Military Science 2.	Div. I. F. 11. Div. II. F. 10.	

SECOND TERM.

Rhetoric—English 1 b.	Div. I. W. F. 9. Div. II. W. F. 8.	2
Geometry—Mathematics 2	Div. I. M. T. W. Th. F. S. 10. Div. II. M. T. W. Th. F. S. 11.	6
*Shopwork—Shopwork 1 b	Div. I. M. T. W. 1:30 to 4. Div. II. W. Th. F. 1;30 to 4.	2½
Freehand Drawing—Drawing 1 b	Div. I. W. Th. F. 1:30 to 4. Div. II. M. T. W. 1:30 to 4.	2½
Roman History—History 2 or *French—French 2	T. Th. S. 8. T. Th. S. 9.	3
Military Tactics—Military Science 2	Div. I. M. 11. Div. II. M. 10.	

THIRD TERM.

Rhetoric—English 1 c	Div. I. W. F. 9. Div. II. W. F. 8.	2
Geometry and Trigonometry—Mathematics 1 and 3	Div. I. M. T. W. Th. F. S. 10. Div. II. M. T. W. Th. F. S. 11.	6
†Descriptive Geometry—Drawing 3 a or †Botany—Botany 1	M. T. W. Th. F. 1:30 to 4.	5
Mediæval History—History 3 or French—French 3	T. Th. S. 8. T. Th. S. 9.	3
Military Tactics—Military Science 2	Div. I. T. 11. Div. II. T. 10.	

*Women take both French and History, and omit Shopwork.

†Descriptive Geometry is taken by students intending to complete either of the Engineering Courses, or the Course in Technical Chemistry; Botany is taken by all other students.

COURSE IN AGRICULTURE

Sophomore Year.

FIRST TERM.

		Exercises per week.
Structural Botany—Botany 2. Introductory Zoölogy—Zoölogy 1.	T. W. Th. F. 1:30 to 4	4
Early English—English 5.	M. 3. W. F. 8	3
French—French 1 or 4. or Modern History—History 4.	T. Th. S. 9 or 11 T. Th. S. 9	3
Inorganic Chemistry—Chemistry 1.	M. W. F. 10	3
Mechanics and Heat—Physics 1.	T. Th. S. 10	3
Military Tactics—Military Science 2.	Th. 9 or 11.	
One Theme—English 2.		

SECOND TERM.

Animal Biology—Zoölogy 2.	W. F. 1:30 to 4	2
English—English 6.	M. 3. W. F. 8.	3
French—French 2 or 5. or Modern History—History 5.	T. Th. S. 9 or 11. T. Th. S. 9	3
Inorganic Chemistry—Chemistry 2.	M. W. F. 10	3
Organic Chemistry—Chemistry 3.	T. Th. 1:30 to 4	2
Sound and Light—Physics 2.	T. Th. S. 10	3
Military Tactics—Military Science 2.	Th. 9 or 11.	
One Theme—English 2.		

THIRD TERM.

Entomology—Zoölogy 3.	M. W. F. 9 to 11	3
French—French 3 or 6. or American History—History 6.	T. Th. S. 9 or 11 T. Th. S. 9	3
Surveying—Engineering 1.	M. T. W. Th. F. 1:30 to 4	5
Organic Chemistry—Chemistry 4.	W. F. 11	2
Electricity and Magnetism—Physics 3.	T. Th. S. 10	3
Military Tactics—Military Science 2.	M. 11.	
One Theme—English 2.		

Junior Year.

FIRST TERM.

		Exercises per week.
Pomology—Agriculture 2.	W. F. 11	2
Chemistry of Plant Growth—Agriculture 1.	T. Th. 11	2
Plant Diseases—Botany 3.	T. Th. 9 to 11	2

Economic Ornithology—Zoölogy 4. S. 11	1
German—German 1. T. Th. S. 8 or American Political History—History 7. M. W. F. 10	3
Chemical Laboratory—Chemistry 5. M. T. W. 1:30 to 4.	3
Farm Work—Agriculture 14. Ten hours per week.	
Military Tactics—Military Science 2. M. 11.	
One original declamation. English 3.	

SECOND TERM.

Foods and Nutrition—Agriculture 3. T. Th. 9	2
Stock Feeding—Agriculture 4. W. 8	1
Forestry—Agriculture 5. F. 8	1
Geology—Geology 1. T. Th. S. 11	3
German—German 2. T. Th. S. 8 or American Literature—English 10. M. W. F. 11	3
Chemical Laboratory—Chemistry 6. M. T. W. 1:30 to 4	3
Farm Work and Shopwork—Agriculture 14. Ten hours per week.	
Military Tactics—Military Science 2. Th. 10.	
One original declamation. English 3.	

THIRD TERM.

Floriculture—Agriculture 6. M. W. 1:30	2
Soils and fertilizers—Agriculture 7. W. F. S. 8	3
Olericulture—Agriculture 8. T. Th. 11	2
German—German 3. T. Th. S. 8 or Logic—Philosophy 1. T. Th. S. 10	3
Mineralogy—Geology 2. M. 8 to 11. W. F. 9 to 11	3
Farm Work—Agriculture 14. Ten hours per week.	
Military Tactics—Military Science 2. F. 8.	
One original declamation—English 3.	

Senior Year.

FIRST TERM.

	Exercises per week.
Comparative Anatomy of Domestic Animals—Agriculture 9. T. Th. 8	2
Dairy Chemistry—Agriculture 12. S. 9.	1
Agricultural Seminary—Agriculture 13. T. Th. 10	2
Political Economy and Laws of Business—Political Science 1 and 2. T. Th. S. 11. W. F. 8.	5
German—German 4. M. W. F. 11 or Psychology—Philosophy 2. M. W. F. 10	3
Farm Work—Agriculture 14. Ten hours per week.	
One original declamation—English 4.	

SECOND TERM.

Dairying—Agriculture 10. W. F. 1:30 to 4	2
Astronomy—Mathematics 6. } T. W. Th. F. S. 9	5
Meteorology—Meteorology 1. }	
Agricultural Seminary—Agriculture 13 and Thesis. S. 8 . .	1
Roads—Engineering 11. T. Th. 10	2
German—German 5. M. W. F. 11	
or Ethics—Philosophy 3. M. W. F. 10 }	3
or Advanced Political Economy—Political Science 4. T. Th. S. 11 }	
Farm Work—Agriculture 14. Ten hours per week.	
One original declamation—English 4.	

THIRD TERM.

Domestic Animals—Agriculture 11. T. Th. 9.	2
Agricultural Seminary—Agriculture 13, and Thesis. T. Th. S. 8	3
German—German 6. M. W. F. 11	
or Advanced Political Economy—Political Science 5. T. Th. S. 11 }	3
Constitutional Law—Political Science 3. M. T. W. Th. F. 10	5
Farm Work—Agriculture 14. Ten hours per week.	
One original declamation—English 4.	

BIOLOGICAL DIVISION OF THE AGRICULTURAL COURSE

Students wishing to make a special study of the biological sciences relating to Agriculture—such as botany, entomology, and economic zoölogy—will elect in their Senior year, the advanced courses in zoölogy, numbered respectively 5, 6, and 7.

CHEMICAL DIVISION OF THE AGRICULTURAL COURSE

The work in this division is intended especially to fit for the profession of an agricultural chemist—for work in experiment stations, large dairy establishments, fertilizer works, etc. Students wishing to take this course will elect, with the advice of the instructors in charge, seven hours per week of chemical work during the Junior year, and eight hours per week during the Senior year. Two years of German will be required in this course, and French is recommended to be taken by students intending to enter the division.

COURSES IN ENGINEERING

Sophomore Year.

FIRST TERM.

	Exercises per week.
Analytic Geometry—Mathematics 4. T. W. Th. F. S. 8	5
Descriptive Geometry—Drawing 3 b. M. W. 1:30 to 4	2
Mechanics and Heat—Physics 1. T. Th. S. 10	3
French—French 1 or 4. T. Th. S. 9 or 11.	3
Shopwork—Shopwork 1 d. M. W. F. 9 to 11: 45	3
Military Tactics—Military Science 2. Th. 9 or 11.	
One Theme—English 2.	

SECOND TERM.

Differential Calculus—Mathematics 5 a. T. W. Th. F. S. 8	5
Perspective Drawing—Drawing 4 a. M. W. 1: 30 to 4	2
Sound and Light—Physics 2. T. Th. S. 10	3
French—French 2 or 5. T. Th. S. 9 or 11	3
Shopwork—Shopwork 1 e. M. W. F. 9 to 11: 45	3
Military Tactics—Military Science 2. Th. 9 or 11.	
One Theme—English 2.	

THIRD TERM.

Integral Calculus—Mathematics 5 b. T. W. Th. F. S. 8	5
Surveying—Engineering 1. M. T. W. Th. F. 1: 30 to 4	5
Electricity and Magnetism—Physics 3. T. Th. S. 10	3
French—French 4 or 6. T. Th. S. 9 or 11	3
Military Tactics—Military Science 2. M. 11.	
One Theme—English 2.	

Junior Year.

FIRST TERM.

Mechanism—Engineeering 2. W. F. 8. T. Th. S. 9 to 11: 45	5
Inorganic Chemistry—Chemistry 1. M. W. F. 10	3
Physical Laboratory—Physics 4. M. T. W. 1: 30 to 4.	3
German—German 1. T. Th. S. 8	3
Shopwork—Shopwork 2 a. Th. F. 1: 30 to 4.	2
Military Tactics—Military Science 2. M. 11.	
One original declamation—English 3.	

SECOND TERM.

Mechanics of Engineering—Engineering 3 a. T. W. Th. F. S. 9	5
Inorganic Chemistry—Chemistry 2. M. W. F. 10	3

Physical Laboratory—Physics 5. M. T. W. 1:30 to 4 3
German—German 2. T. Th. S. 8 3
Shopwork—Shopwork 2 b. Th. F. 1:30 to 4 2
Military Tactics—Military Science 2. Th. 10.
One original declamation—English 3.

THIRD TERM.

Mechanics of Engineering—Engineering 3 b. T. W. Th. F. S. 11 5
Mineralogy—Geology 2. M. W. F. 9 to 11 3
Physical Laboratory—Physics 6. M. T. W. 1:30 to 4 3
German—German 3. T. Th. S. 8 3
Shopwork—Shopwork 2 c. Th. F. 1:30 to 4 2
Military Tactics—Military Science 2. F. 8.
One original declamation—English 3.

COURSE IN MECHANICAL ENGINEERING

Senior Year.

FIRST TERM.

Materials of Construction—Engineering 4. M. W. F. S. 11 . . 4
Thermodynamics—Engineering 5 a. M. 10. T. Th. 11 . . 3
Mechanical Drawing—Drawing 4 b. F. S. 8 to 11 2
Mechanical Laboratory—Engineering 8 a. Th. F. 1:30 to 4 . 2
Shopwork—Shopwork 2 d. T. W. Th. 8 to 11 3
Chemical Laboratory—Chemistry 5. M. W. 1:30 to 4 2
One original declamation—English 4.

SECOND TERM.

Machine Design—Engineering 9. M. T. W. Th. 11 4
Thermodynamics—Engineering 5 b. M. F. S. 10 3
Mechanical Laboratory—Engineering 8 b. W. Th. F. 1:30 to 4 . 3
Shopwork—Shopwork 2 e. T. W. Th. 8 to 11 3
Chemical Laboratory—Chemistry 6. M. T. 1:30 to 4 2
Thesis. F. 11 1
One original declamation—English 4.

THIRD TERM.

Heat Motors—Engineering 6. W. Th. F. 9 3
Mechanical Laboratory—Engineering 8 c. M. 10 to 11:45. T. 8 to 11:45 2
Shopwork—Shopwork 2 f. M. T. W. 1:30 to 4 3
Thesis. W. Th. F. S. 10 to 11:45 3
Political Economy—Political Science 1. M. 9. W. F. 8. Th. F. 3 5
One original declamation—English 4.

COURSE IN ELECTRICAL ENGINEERING

Senior Year.

FIRST TERM.

Materials of Construction—Engineering 4. M. W. F. S. 11	4
Thermodynamics—Engineering 5 a. M. 10. T. Th. 11	3
Mechanical Drawing—Drawing 4 b. F. S. 8 to 11	2
Mechanical Laboratory—Engineering 8 a. Th. F. 1:30 to 4	2
Dynamos and Electro-Motors—Engineering 7. T. W. Th. 8	3
Chemical Laboratory—Chemistry 5. M. W. 1:30 to 4	2
One original declamation—English 4.	

SECOND TERM.

Applications of Electricity—Engineering 10 a. M. T. W. Th. 11	4
Thermodynamics—Engineering 5 b. M. F. S. 10	3
Mechanical Laboratory—Engineering 8 b. W. Th. F. 1:30 to 4	3
Electrical Laboratory—Physics 7. T. W. Th. 8 to 11	3
Chemical Laboratory—Chemistry 6. M. T. 1:30 to 4	2
Thesis. F. 11	1
One original declamation—English 4.	

THIRD TERM.

Heat Motors—Engineering 6. W. Th. F. 9	3
Applications of Electricity—Engineering 10 b. W. 1:30 to 4. Th. F. 1:30 to 3	3
Electrical Laboratory—Physics 8. M. W. F. 10 to 11:45	2
Thesis. T. Th. S. 10 to 11:45	3
Political Economy—Political Science 1. M. 9. W. F. 8. Th. F. 3	5
One original declamation—English 4.	

COURSE IN TECHNICAL CHEMISTRY*

Sophomore Year.

FIRST TERM.

Analytic Geometry—Mathematics 4. T. W. Th. F. S. 8	5
Descriptive Geometry—Drawing 3 b. M. W. 1:30 to 4 or Structural Botany—Botany 2. T. W. 1:30 to 4	2
French—French 1 or 4. T. Th. S. 9 or 11	3

* One year of French and two years of German are required of all students taking this course.

Inorganic Chemistry—Chemistry 1. M. W. F. 10 3
Mechanics and Heat—Physics 1. T. Th. S. 10 3
Military Tactics—Military Science 2. Th. 9 or 11.
One Theme—English 2.

SECOND TERM.

Differential Calculus—Mathematics 5 a. T. W. Th. F. S. 8 . . 5
French—French 2 or 5. T. Th. S. 9 or 11 3
Inorganic Chemistry—Chemistry 2. M. W. F. 10 3
Organic Chemistry—Chemistry 3. T. Th. 1:30 to 4 2
Sound and Light—Physics 2. T. Th. S. 10 3
Military Tactics—Military Science 2. Th. 11.
One Theme—English 2.

THIRD TERM.

Integral Calculus—Mathematics 5 b. T. W. Th. F. S. 8 . . . 5
Mineralogy—Geology 2. M. W. F. 9 to 11 3
French—French 3 or 6. T. Th. S. 9 or 11 3
Organic Chemistry—Chemistry 4. W. F. 11 2
Electricity and Magnetism—Physics 3. T. Th. S. 10 3
Military Tactics—Military Science 2. M. 11.
One Theme—English 2.

Junior Year.

FIRST TERM.

Chemistry of Plant Growth—Agriculture 1. T. Th. 11 2
Shopwork—Shopwork 2 a. T. W. Th. 9 to 11 2
Chemical Laboratory—Chemistry 5. Th. F. 1:30 to 4. M. F. S. 9 to 11:45 6
Physical Laboratory—Physics 4. M. T. W. 1:30 to 4 3
German—German 1. T. Th. S. 8 3
Military Tactics—Military Science 2. M. 11.
One original declamation—English 3.

SECOND TERM.

Chemical Laboratory—Chemistry 6. M. T. W. Th. F. 1:30 to 4. M. 9 to 11:30 6
Applied Chemistry—Chemistry 7 a. T. W. 10 2
Mechanics of Engineering—Engineering 3 a. T. W. Th. F. S. 9 . 5
German—German 2. T. Th. S. 8 3
Military Tactics—Military Science 2. Th. 10.
One original declamation—English 3.

THIRD TERM.

Chemical Laboratory—Chemistry 6. M. T. W. Th. F. 1:30 to 4. S. 9 to 11 6
Applied Chemistry—Chemistry 7 b. M. W. 8 2
Mechanics of Engineering—Engineering 3 b. T. W. Th. F. S. 11 . 5
German—German 3. T. Th. S. 8 3
Military Tactics—Military Science 2. F. 8.
One original declamation—English 3.

Senior Year.

FIRST TERM.

Chemical Laboratory—Chemistry 8. M. W. F. 1:30 to 4. T. Th. 8 to 11 or W. F. 8 to 11 5
Organic Chemistry—Chemistry 9. T. Th. 1:30 to 4 2
Chemical Journals—Chemistry 10. S. 11 1
German—German 4. M. W. F. 11 3
Thermodynamics—Engineering 5 a. M. 10, T. Th. 11 3
Mechanical Drawing—Drawing 4 b. F. S. 8 to 11 2
or Dynamos and Electro-Motors—Engineering 7. T. W. Th. 8 . 3
One original declamation—English 4.

SECOND TERM.

Chemical Laboratory—Chemistry 8. M. T. W. Th. F. 1:30 to 4 . 5
Thermodynamics—Engineering 5 b. M. F. S. 10 3
Meteorology—Meteorology 1. T. Th. 9 2
Chemical Journals—Chemistry 10. S. 11 1
Chemical Philosophy—Chemistry 11 a. T. Th. 10 2
German—German 5. M. W. F. 11 3
One original declamation—English 4.

THIRD TERM.

Chemical Laboratory—Chemistry 8. M. T. W. 1:30 to 4. Th. S. 9 to 11:45 5
Chemical Journals—Chemistry 10. S. 8 1
Chemical Philosophy—Chemistry 11 b. T. Th. 8 2
Political Economy—Political Science 1. M. 9. W. F. 8. Th. F. 3 5
German—German 6. M. W. F. 11 3
One original declamation—English 4.

GENERAL COURSE

This course gives to students an opportunity to take parts of the courses in Agriculture and the Mechanic Arts: to pursue the study of English, French, German, and History each for two or more years: to devote to Philosophy one year and to Mathematics and the Sciences the time usually allowed in colleges. With its arrangement of elective studies it is fitted to serve at the same time as a course for women and as a preparation for professional study or business life.

Sophomore Year.

FIRST TERM.

		Exercises per week.
Structural Botany—Botany 2. Introductory Zoölogy—Zoölogy 1.	T. W. Th. F. S. 1:30 to 4	4
Early English—English 5.	M. 3. W. F. 8	3
French—French 1 or 4.	T. Th. S. 9 or 11	3
Inorganic Chemistry—Chemistry 1.	M. W. F. 10	3
Mechanics and Heat—Physics 1.	T. Th. S. 10	3
Military Tactics—Military Science 2.	Th. 9 or 11	1
One Theme—English 2.		

SECOND TERM.

Elizabethan Writers—English 6.	M. 3. W. F. 8	3
French—French 2 or 5.	T. Th. S. 9 or 11	3
Inorganic Chemistry—Chemistry 2.	M. W. F. 10	3
Organic Chemistry—Chemistry 3.	T. Th. 1:30 to 4	2
Sound and Light—Physics 2.	T. Th. S. 10	3
Animal Biology—Zoölogy 2 or Advanced Freehand Drawing—Drawing 2	W. F. 1:30 to 4.	2
Military Tactics—Military Science 2.	Th. 9 or 11	1
One Theme—English 2.		

THIRD TERM.

French—French 3 or 6.	T. Th. S. 9 or 11	3
Entomology—Zoölogy 3.	M. W. F. 9 to 11	3
Surveying—Engineering 1.	M. T. W. Th. F. S. 1:30 to 4	5
Organic Chemistry—Chemistry 4.	W. F. 11	2
Electricity and Magnetism—Physics 3.	T. Th. S. 10	3
Military Tactics—Military Science 2.	M. 11	1
One Theme—English 2.		

Junior Year.

FIRST TERM.

German—German 1. T. Th. S. 8	3
American Political History—History 7. M. W. F. 10	3
Writers of the Restoration—English 7. Th. F. 3	2
Military Tactics—Military Science 2. M. 11	1
One original declamation—English 3.	

Elective, eight exercises per week, from the following:

Early Modern History—History 4. T. Th. S. 9	3
Chemistry of Plant Growth—Agriculture 1. T. Th. 11	2
Pomology—Agriculture 1. W. F. 11	2
Economic Ornithology—Zoölogy 4. S. 11	1
Chemical Laboratory—Chemistry 5. M. T. W. 1:30 to 4	3
Physical Laboratory—Physics 4. M. T. W. 1:30 to 4	3

SECOND TERM.

German—German 2. T. Th. S. 8	3
American Literature—English 10. M. W. F. 10	3
Victorian Writers—English 8. Th. F. 3	2
Military Tactics—Military Science 2. Th. 10	1
One original declamation—English 3.	

Elective, eight exercises per week, from the following:

Geology—Geology 1. T. Th. S. 11	3
European History since 1789—History 5. T. Th. S. 9	3
American Literature—English 10. W. F. 9	2
Food and Nutrition—Agriculture 3. T. Th. 9	2
Chemical Laboratory—Chemistry 6. M. T. W. 1:30 to 4	3
Physical Laboratory—Physics 5. M. T. W. 1:30 to 4	3

THIRD TERM.

German—German 3. T. Th. S. 8	3
Logic—Philosophy 1. T. Th. S. 10	3
Mineralogy—Geology 2. M. W. F. 9 to 11	3
Military Tactics—Military Science 2. F. 8	1
One original declamation—English 3.	

Elective, six exercises per week, from the following:

American History to 1789—History 6. T. Th. S. 9	3
Chemical Laboratory—Chemistry 6. M. T. W. 1:30 to 4	3
Physical Laboratory—Physics 6. M. T. W. 1:30 to 4	3
English Romance—English 9. M. T. W. 3	3
Floriculture—Agriculture 6. M. T. W. 1:30	3

Senior Year.

FIRST TERM.

Political Economy—Political Science 1 Laws of Business—Political Science 2	W. F. 8. T. Th. S. 11	5
German—German 4.	M. W. F. 11	3
Psychology—Philosophy 2.	M. W. F. 10	3
Study of Words—English 11.	Th. F. 3	2
One original declamation—English 4.		
Chemical Laboratory—Chemistry 8 Advanced Zoölogy—Zoölogy 5 Advanced Botany—Botany 4 Advanced Freehand Drawing—Drawing 5 a	[Elect one] M. T. W. 1: 30 to 4	3

SECOND TERM.

English 4 required: sixteen exercises elective.

One original declamation—English 4.		
German—German 5.	M. W. F. 11	3
Astronomy—Mathematics 6 Meteorology—Meteorology 1	T. W. Th. F. S. 9	5
Roads—Engineering 11.	T. Th. 10	2
Ethics—Philosophy 3.	M. W. F. 10	3
Advanced Political Economy—Political Science 4.	T. Th. S. 11	3
Advanced Rhetoric—English 12.	Th. F. 1: 30 to 4	2
Chemical Laboratory—Chemistry 8.	M. T. W. 1: 30 to 4	3
Advanced Zoölogy—Zoölogy 5.	M. T. W. 1: 30 to 4	3
Advanced Botany—Botany 4.	M. T. W. 1: 30 to 4	3
Advanced Freehand Drawing—Drawing 5 b.	M. T. W. 1: 30 to 4	3

THIRD TERM.

English 4 and Thesis Work required: eleven to fourteen exercises elective.

Thesis Work		2 to 5
One original declamation—English 4.		
Constitutional Law—Political Science 3 Laws of Business—Political Science 2	M. T. W. Th. F. 10	5
German—German 6.	M. W. F. 11	3
Advanced Political Economy—Political Science 5.	T. Th. S. 11	3
Chemical Laboratory—Chemistry 8.	M. W. F. p. m.	3
Advanced Zoölogy—Zoölogy 5.	M. W. F. p. m.	3
Advanced Botany—Botany 4.	M. W. F. p. m.	3
Advanced Freehand Drawing—Drawing 5 c.	M. W. F. p. m.	3

THE TWO YEARS' COURSE IN AGRICULTURE

The Two Years' Course in Practical and Theoretical Agriculture provided for by the Legislature of 1895 was established for and is open to "students who can pass a fair and reasonable examination in reading, spelling, writing, arithmetic, English grammar, and the geography and history of the United States." This course is especially devoted to the study of practical and theoretical agriculture in its various branches, and the natural sciences, which are so closely related to successful farming. At least ten hours each week are spent in practical exercises, which so far as possible, are educational in their nature. This work is done on the farm, or in the garden, barn, greenhouse, or shop.

The course offers unusual opportunities to young men to obtain in a short time and at small expense a knowledge of the fundamental principles of agriculture.

DESCRIPTION OF STUDIES

1. Agriculture. *Thirty exercises.*

The First Principles of Agriculture. The course deals with the fundamentals of general agriculture; and forms a foundation for the courses that follow it. Text-book together with lectures.

2. Comparative Anatomy of Domestic Animals. *Thirty exercises.*

This course familiarizes students with the general external and internal organs of animals, their uses, etc. Lectures and recitations.

3. Horticulture (Fruit growing). *Thirty exercises.*

The origin, history, and importance of fruits, methods of culture, pruning, spraying, marketing, etc. Lectures and recitations.

4. Mathematics I. *One hundred and five exercises.*

Elementary Algebra, which continues throughout the first year, three hours per week.

5. English I. *Seventy exercises.*

Grammar and Composition, which continue throughout the first year, two hours per week.

6. Freehand Drawing. *Thirty exercises.*

The course includes outline drawing from models and from groups of common objects, light and shade drawing from models and from casts of historic ornament; the principles of perspective; elementary design; machine sketching and the use of instruments. Two and one-half hours' work is counted as one exercise.

7. Practical Work.

Throughout the short course, each student is required to spend ten hours per week in practical work. This work is either on the farm or in the garden and nursery during the fall and spring; and in the barn, creamery, greenhouse, carpenter shop, or machine shop, during the winter. The object of this work is to familiarize the student with the application of a theoretical training.

8. Stock Feeding. *Forty exercises.*

The course will consist of twenty recitations, and twenty exercises in practical feeding, and care of the college herd.

9. Dairying. *Forty exercises.*

This course consists of practical and theoretical instruction in methods of modern dairying, including the general management of the dairy, the methods of milk analysis, the bacteriology of the dairy, the use of separators, the making of butter, and preparation of milk for the city market. Two and one-half hours' work is counted as one exercise.

10. Arboriculture and Forestry. *Ten exercises.*

The use of trees for shelter, shade, and ornament; and their propagation. Values of trees for timber; how to improve existing woodlands; influence of forests upon soils, crops, and climate; establishment and management of plantations of forest trees, etc.

11. Bookkeeping. *Twenty exercises.*

This course familiarizes students with business methods in keeping accounts in single and double entry.

12. Botany. *Fifty exercises.*

A general introduction to the study of plants by means of laboratory work and lectures, beginning with the lower forms.

13. Horticulture (Vegetable Gardening). *Twenty exercises.*

Varieties adapted to both the home and the market garden. Importance of the trucking industry, both out of doors and under glass.

Important trucking sections, methods of culture, marketing, etc. Lectures and recitations.

14. Horticulture (Floriculture). *Twenty exercises.*

This course deals with the general florist's business. Some reference is made also to landscape gardening. Composting soils, propagating, transplanting, greenhouse construction, marketing, etc.

15. Field Crops. *Thirty exercises.*

The different groups of field crops (grasses, cereals, clovers, etc.) are each taken up and studied collectively and individually. The proper soils, preparation of seed bed, fertilizers, drainage, harvesting, profits, etc.

16. Structural Botany. *Thirty exercises.*

Lectures and laboratory work on the minute structure and physiology of plants, with special reference to the higher forms.
Open only to those who have taken Course 12.

17. Introductory Zoölogy. *Thirty exercises.*

A general introduction to the study of animal life, by means of lectures and laboratory dissections of the principal types.

18. Mathematics II. *Seventy-five exercises.*

Plane Geometry, which continues throughout the first two terms of the second year, three hours per week.

19. English II. *Seventy exercises.*

English Literature, which continues through the second year, two hours per week.

20. Inorganic Chemistry I. *Forty-five exercises.*

Lectures and recitations on general theoretical chemistry, illustrated by experiments, charts, specimens, lantern views, etc. Solutions of chemical problems will be required.

21. Animal Biology. *Twenty exercises.*

A general study of the nature and processes of animal life, with especial attention to heredity, variation, development, and mental powers.
Open to students who have taken Course 17.

22. Elementary Geology. *Thirty exercises.*

23. Inorganic Chemistry II. *Thirty exercises.*

Course 2 is a continuation of Course 1, but the time will be spent mainly on the metallic elements, their metallurgy, salts, etc.

Open only to students who have passed in Course 20.

24. Domestic Animals. (Breeds and Breeding.) *Twenty exercises.*

Lectures and recitations. References: Mile's "Stock Breeding," and Curtis's "Horses, Cattle, Sheep, and Swine," etc.

25. Entomology. *Thirty exercises.*

A review of the classification, structural characters, and biological relations of insects, with a special study of those injurious to cultivated crops and domestic animals, and of the means of preventing their injuries.

Open only to those who have taken Courses 17 and 21.

26. Field and Road Measurements. *Thirty exercises.*

A short course in practical surveying without angle measurements, including land areas, drainage, road leveling, etc.

27. Physics, Elementary. *Twenty exercises.*

ARRANGEMENT OF STUDIES

First Year.

FIRST TERM.

	Exercises per week
Agriculture	2
Comparative Anatomy of Domestic Animals	2
Horticulture (Fruit Growing)	2
Mathematics I	3
English I	2
Drawing	2

Practical Work, ten hours.

SECOND TERM.

Stock feeding	2
Dairying	4
Forestry	1
Bookkeeping	2

Mathematics I	3
English I	2

Practical Work, ten hours.

THIRD TERM.

Botany	5
Horticulture (Vegetable Gardening)	2
Floriculture	2
Mathematics I	3
English I	2

Practical Work, ten hours.

Second Year.

FIRST TERM.

	Exercises per week.
Field Crops	2
Structural Botany and Zoölogy	4
Mathematics II	3
English II	2
Chemistry I	3

Practical Work, ten hours.

SECOND TERM.

Animal Biology	2
Geology	3
Mathematics II	3
English II	2
Chemistry II	3

Practical Work, ten hours.

THIRD TERM.

Breeds and Breeding	2
Entomology	3
Field Measurements	5
English II	2
Physics	2

Practical Work, ten hours.

TEN WEEKS' WINTER COURSE IN AGRICULTURE.

The college offers a Winter Course in agriculture, beginning Thursday, January 14, and continuing until Wednesday, March 24, 1897.

No entrance examination is required, but students taking the course should possess a common school education.

The studies offered are dairying, stock-feeding, winter gardening, wood-working, forestry, and entomology, with practice in the creamery, barn, green-house, or wood-shop.

A fee of five dollars will be charged as tuition.

The expense of the course may be estimated as follows:

Room and board, ten weeks, at $4.00 . .	$40.00
Tuition fee	5.00
Books	5.00
Total	$50.00

Applicants should report at the president's office, Thompson Hall, Durham, on Wednesday, January 13, 1897.

FOUR WEEKS' COURSE IN DAIRYING.

This course is offered in connection with the Winter Course in Agriculture, to young men who wish to make a specialty of dairying.

Students may begin this course at any time between January 14 and February 18, 1897, and devote all their time for four weeks to the following subjects: butter making, milk testing, pasteurizing milk and cream, dairy bacteriology, and dairy husbandry.

The creamery is equipped with separator, milk tester, pasteurizer, and all tools required in making butter and preparing milk and cream for market.

Requirements for admission are the same as for the Winter Course in Agriculture.

ESTIMATE OF EXPENSES.

Room rent, four weeks at $1.00, . .	$4.00
Board, four weeks at $3.00, . . .	12.00
Fee, ...	5.00
Books, ...	3.00
Total, ...	$24.00

For circulars or further information concerning the course, address President Charles S. Murkland, or Professor C. M. Weed, Secretary, Durham, N. H.

NEW HAMPSHIRE COLLEGE SUMMER SCHOOL OF BIOLOGY.

The Summer School of Biology conducted by the New Hampshire College of Agriculture and the Mechanic Arts was established in 1894, for the purpose of giving teachers in the secondary and lower schools an opportunity to acquire a sound knowledge of the essential features of plant and animal life by means of laboratory studies of the more important organic types. These laboratory exercises have been supplemented by lectures and reading upon the elements of classification and biological relations, and by special discussions, illustrated by exhibits of those phases of natural history that may readily be used for nature studies in the lower schools.

For the session of 1897, to continue for four weeks during July and August, the following courses are offered:

(1). A laboratory course in Zoölogy, consisting of personal studies of the morphology and biology of the principal types of animal life, beginning with the Amœba and going upwards in the scale of life, together with lectures upon their classification and biological relations.

(2). A laboratory course in botany, consisting of personal studies of the principal types of plant life, beginning with the lowest forms and going upward, together with studies of their classification and biological relations.

These are coördinate courses, designed to give the student a first-hand knowledge of the living world, and to fit him for teaching the biological sciences in the high school, or intelli-

gently to conduct nature studies in the lower schools. Students attending the summer school for the first time are advised to take both these courses unless they have previously pursued similar ones.

(3). A course in nature study for common schools.

(4). A course in the systematic botany of the higher plants, designed to give a general knowledge of the higher forms of plant life, and to familiarize the student with the names and peculiarities of the species forming the New England flora.

A certificate will be given to all who satisfactorily complete one or more of the courses offered.

An illustrated circular giving full announcement of the School will be sent to any address upon application to President C. S. Murkland or Professor C. M. Weed, Durham, N. H.

NON-RESIDENT COURSE IN AGRICULTURE

The Non-resident Course in Agriculture conducted by the New Hampshire College of Agriculture and the Mechanic Arts was established in January, 1894, and has been in successful operation ever since. The course is primarily designed to meet the needs of those farmers' sons who are unable to leave home to attend college, but who feel the need of the fuller knowledge of their work which the college offers. It has enrolled a considerable number of such students, and also has attracted many young men in cities who intend to become farmers.

The course is conducted as a correspondence course, books and bulletins being sent the student, who studies them and returns answers to examination questions. The bulletins are furnished free, and the books at a discount from publishers' prices, averaging about 25 per cent.

In the following pages will be found a statement of the methods of this course, list of the books used, blank forms of application, and such other information as the prospective student is likely to desire.

METHODS

The methods of the course are briefly as follows:

1. It is free to all, with no entrance examination or fee.

The student may begin at any time; and the privileges of the course are not limited to residents of New Hampshire.

2. Students are offered the option of working for a certificate or not, as they see fit, but they are strongly urged to do the former. Those so working will, as studies are finished, send in answers to sets of examination questions; those not so working will submit a statement that the requisite reading has been carefully done.

3. Each of the books and pamphlets is estimated at a certain number of exercises, an exercise averaging ten pages of reading matter.

4. The satisfactory completion of six hundred exercises entitles the student to a certificate. It is probable that under ordinary conditions this will require about two years.

5. Each student working for a certificate is required to take certain general studies, such as Soils, Tillage, Noxious Insects, Fungous Diseases, Meteorology, Laws of Plant Growth, Farm and Household Chemistry, Fertilizers. etc., and to select at least three lines of study from the following similar subjects:

Dairying and Stock-feeding.	Vegetables.
Poultry-keeping.	Floriculture.
Orchard Fruits.	Plant Propagation.
Small Fruits.	Forestry.

Commercial Horticulture and Market Gardening.

Students not working for a certificate may select any of the above subjects they desire, but it is recommended that they pursue the prescribed lines of general reading in connection with special subjects.

6. The cost of books is not great, ranging from $15 to $20 for the full certificate course. As far as possible the College will furnish bulletins free. In case two or three students live near each other, they can use the same set of books and thus reduce the cost. The student will remit by postal money order or registered letter a small amount ($5 is sufficient) to cover the cost of the first instalment of books, which will be ordered to be sent immediately. When he has finished these books, he will send a similar remittance for the next instalment; and so on

through the course. The student may suit his own convenience as to the amount of each instalment.

A circular giving full information concerning this non-resident course will be sent to any address upon application to President C. S. Murkland, or Prof. C. M. Weed, Durham, N. H.

HOME CLASSES IN AGRICULTURE

During recent years a movement of great significance has been agitating the educational centres of the English-speaking world. It is known as university extension, or, better, as educational extension. It has resulted from the recognition of the fact that comparatively few people can go to college or university; and consists essentially in taking the college to those who cannot go to the college; in offering to every one everywhere the opportunity of a college education. It seeks to solve the problem of the education of the masses, by widening the scope of existing institutions. Its history shows that it is in peculiar harmony with the sentiments and systems of the American people, and it has well been called "the most significant educational movement of the nineteenth century."

While the older colleges and universities have done much in the way of university extension along the lines of higher education, little, if any, definite organized effort has been made to adapt the movement to agricultural education. Much tending in the same direction in the way of lectures and reading courses has been done in many states, as well as in New Hampshire, where the College of Agriculture and the Mechanic Arts has had in successful operation for some time past a system of lectures available by any agricultural organization, and a non-resident course in agriculture open to any one elsewhere. While there is no intention of abandoning either of these lines of work, the College believes the time is ripe for so combining them in certain localities as to carry out more fully the educational extension idea. It therefore makes this proposition:

If ten or more persons in any grange or other agricultural organization will read the books and pamphlets on the list of any of the subjects named, the College will furnish one or more

lectures upon that subject, provided the ordinary expenses of the lecturer are paid by the organization. The College will also furnish the books at a reduced price, with very few exceptions giving a reduction of 25 per cent. on the usual price.

It is believed that this proposition is an entirely practicable one, which, if successfully carried out, should be productive of great good. The difficulty with isolated lectures in public meetings and institutes is that the hearers come with no special preparation in that line of thought, often merely to be amused, and the effect produced is usually not a permanent one. On the other hand, the difficulty with long reading courses is that it seems too large an enterprise for the great majority of people to take up. The present proposition is a medium between these two extremes; it offers to the people of each locality the opportunity for a short course of study of one or more subjects in which they are especially interested, with the use of a few books of small cost, and the privilege of instruction from a specialist, to whom they may apply for any special information they desire.

A circular giving full information concerning subjects and books available for such home classes will be sent to any address on application to President Charles S. Murkland, Durham, N. H.

GENERAL INFORMATION.

ATTENDANCE

All regular students are required to attend chapel and rhetoricals, and to register for at least sixteen exercises per week. Juniors, Sophomores, and Freshmen are required to attend military drill.

PRIZES

I. The Smyth Prizes—Hon. Frederick Smyth, of Manchester, N. H., offers to the members of the Senior and Junior classes two prizes, one of twenty dollars and the other of ten, for the best essays on subjects connected with agriculture or the mechanic arts; also three prizes, one of twenty, one of fifteen, and one of ten dollars, for excellence in oratory, open to the upper classes; also two prizes for reading, one of fifteen and one of ten dollars, open to the lower classes.

II. Bailey Prize.—Dr. C. H. Bailey, of Gardner, Mass., and E. A. Bailey, B. S., of Winchendon, Mass., offer a prize of ten dollars for proficiency in chemistry.

III. Erskine Mason Memorial Prize.—Mrs. Erskine Mason, of Stamford, Conn., has invested one hundred dollars as a memorial of her son, a member of the class of '93, the income from which is to be given, for the present, to that member of the Senior class who has made the greatest improvement during his course.

DEGREES

The degree of Bachelor of Science will be conferred upon those who complete a four years' course, or its equivalent, and pass the final examinations. Each candidate for a degree must prepare a thesis on some subject relating to the course of study taken.

The college offers opportunities for post-graduate study in agricultural, scientific, and engineering lines. After the satisfactory completion of an appropriate amount of work, advanced degrees will be given.

SPECIAL STUDENTS

Any person of mature years may be admitted as a special student, upon presenting satisfactory proof of ability to complete the desired course of study. Undergraduate students who are not in full standing in their respective classes, are registered as *partial course students*, and are subject to all regulations applicable to students in full standing.

WOMEN

Women attending the college may elect any course laid down in the curriculum, subject to the conditions prescribed for all students. They may omit manual labor on the farm and in the shop, and substitute other studies.

The General Course, with its electives, is specially prepared for women, and is so planned that special courses may be arranged in literature, languages, history, philosophy, drawing, and manual training.

The courses in agriculture and chemistry afford opportunities for the study of the natural sciences, and the engineering courses offer exceptional advantages in mathematics and physics.

BUILDINGS

THOMPSON HALL

Thompson Hall, the main college building, has a length of 128 feet, exclusive of the porte cochère, which is 40 feet long, and a width of 93 feet in the widest part. It is built of granite and brick, and has three stories besides the basement.

One half of the first floor and basement is devoted to the library, which is provided with a large, well-lighted reading room for papers and magazines, a reference room for special work, a librarian's room, a delivery room, and shelf space for fifty thousand volumes.

The remainder of the first floor is used for offices, recitation rooms, and a waiting room for women.

On the second floor are more offices and recitation rooms, and the botanical and zoölogical laboratories and the museum.

On the third floor is the large hall used as an auditorium, two literary society rooms, and the bell-boy's room.

The building is lighted by gas and electricity, and provided with the most approved system of heating and ventilation.

CONANT HALL

[Chemical and Physical Laboratories]

Conant Hall contains the laboratories and lecture rooms for instruction in chemistry, physics, and electrical engineering. It is a substantial brick building, 92 by 70 feet, and three stories high, including the basement. It is heated by steam brought from the shops, lighted by gas and electricity, and provided with a system of thorough ventilation. Water, gas, high pressure steam, hydrogen, oxygen, vacuum, and blast are supplied through pipes whenever needed, and the lecture rooms in addition, have switches controlling both dynamo and battery currents, and arrangements for stereopticon illustration.

The basement contains a small workshop, the battery, photometer, photographic and comparator rooms, a clock room protected by double walls against changes of temperature, an acid room, and a water and gas laboratory, provided with the necessary fixtures and appliances.

The first floor, with the exception of one room, is occupied by the physics department. It contains the mineralogical laboratory, which is provided with tile-covered desks and other facilities for blowpipe analysis; the junior physical laboratory; an apparatus room; a reading room and reference room for physical and electrical books and periodicals; an electrical laboratory, from the neighborhood of which masses of iron have been excluded, so that magnetic measurements can be made with a good degree of accuracy; and the physical lecture room, which is provided with all necessary conveniences, as before mentioned. For optical experiments, the room can be darkened by means of special window-shutters, operated from one of the

lecture desks. A stone pier between the two desks makes it possible to use delicate instruments.

The second floor is given up entirely to the chemical department. It contains storerooms, an organic laboratory, a qualitative laboratory, a private laboratory, a dark room for polariscopic and spectroscopic work, a lecture room provided with facilities as before described, a quantitative laboratory, and a room to contain the delicate chemical balances and most important reference works.

The laboratories are fitted up with the most modern accessories, and with special reference to the kind of work to be performed in each.

THE SHOP BUILDINGS

The shops have been planned and built with the object of providing facilities for instruction in the working of wood and metals, and in the design, construction, care, and management of machinery. Incorporated with the shops is a central station for furnishing heat, light, water, and power, wherever needed in any of the college buildings; and the machinery of this station forms a part of the material equipment of the engineering departments.

The main shop building is 42 by 106 feet, and two stories high, with a basement 31 by 42 feet. In a separate one-story building, 40 by 100 feet, on a level with the basement of the main building, are the boiler house, forge shop, coal shed, and foundry.

In the boiler room, three boilers, aggregating one hundred and sixty horse-power, furnish steam to all the college buildings, wherever needed for heating or power. A brick chimney 95 feet high carries away the waste gases from the furnaces. The coal room provides for the storage of two hundred tons of coal conveniently near the boilers.

The basement of the main shop building is used as an engine-room, containing a forty horse-power engine, furnishing power for the shops and for the electric lighting; a dynamo for lighting the college buildings and campus; and the large steam pump, which receives water by gravity from the reservoir one half mile distant, and forces it through underground mains to

the various hydrants and buildings. The engine-room serves as a power laboratory, and the machines mentioned, with others, will give to students opportunity for making efficiency tests.

On the first floor of the main shop building, a lavatory is provided. The largest room on this floor is the machine-shop, where there is opportunity for practice in the operations of working metals by cutting tools, both by hand work and by machinery.

The second floor of this building is mainly occupied by a wood shop, in which the common branches of carpentry, joinery, and pattern making are taught. Practice is given in the use of carpenter's tools, and in the care and operation of the machines of most general use in wood-working.

The shop buildings are constructed on the "slow-burning" principle, with thick walls, and heavy, continuous plank floors. The rooms are all well lighted and well ventilated.

APPARATUS

The various chemical laboratories are supplied with a full line of such apparatus as is required in each. Besides all necessary glass and porcelain ware, this includes water baths; drying ovens, combustion, muffle, and assay furnaces; platinum dishes and crucibles; polariscope; spectroscope; balances; lantern and other lecture appliances, etc.

The physical laboratory is equipped with a good collection of the usual apparatus for laboratory work and lecture-room illustration, to which will be continually added pieces purchased or made in the college shop.

In electricity and magnetism, the equipment includes instruments of high precision, and of the latest forms, for the measurement of current electro-motive force and resistance, as well as others of less accuracy for elementary work.

For more strictly electrical engineering work, the department has the five-hundred light alternator used in lighting the college buildings, a direct-current "exciter" dynamo, all the apparatus of a complete fifty-five light, Edison isolated electric lighting plant, a Sorley storage battery of twenty-six cells, arc and incandescent lamps, and standard forms of voltmeter, ammeter, and transformer.

The zoölogical laboratory is well supplied with aquaria, microscopes, dissecting tools, charts, reference books, collections, etc.

The botanical laboratory is supplied with a good herbarium, microscopes, and the other necessary appliances.

The surveying instruments are sufficient in number and of the most approved pattern.

MUSEUM

The museum had for a nucleus the collections made during the state geological survey. To this additions have been made from various sources. Many specimens are being collected to illustrate zoölogy—especially entomology. It occupies a large, well-lighted room in the main building.

LIBRARY

The library of the college consists of about five thousand bound volumes besides pamphlets. A considerable part of these are new and expensive books, making good working libraries for the different departments of instruction, including economic science and English and American literature.

Students also have the free use of the Durham public library of about five thousand well-selected volumes.

The college supports a reading-room, which is well supplied with the leading American and foreign periodicals.

THOMPSON HOUSE

The late Benjamin Thompson's village residence has been fitted and furnished by the college for a dormitory and home for women students. Thompson House will accommodate twenty students, and is in charge of a matron.

FARM

The farm contains more than three hundred acres of valuable land. It has been provided partly from the funds given by Hon. John Conant, and partly from the Benjamin Thompson estate.

It is used for the purpose of an experiment station, for which

it is considered by leading agriculturists as being especially fitted.

A model barn has been erected, at an expense of about ten thousand dollars.

SITUATION AND RAILROAD CONNECTIONS

Durham is situated on the western division of the Boston & Maine railroad, sixty-two miles from Boston, and about midway between Rockingham Junction and the city of Dover, being five miles from the latter place.

PECUNIARY AID AND EXPENSES

Tuition is $60 per year, although numerous scholarships give free tuition to many New Hampshire students. The trustees have arranged the scholarships as follows: There are thirty Conant scholarships, each paying $40 and tuition, $60,—total, $100. These are to be assigned under the following conditions: 1. They are to be given to young men taking an agricultural course; 2. Each town in Cheshire county is entitled to one scholarship, and Jaffrey is entitled to two; 3. Scholarships not taken by students from Cheshire county, and those in excess of the number of towns, are to be assigned to agricultural students at the discretion of the Faculty.

There are twenty-four senatorial scholarships—one for each senatorial district. Each scholarship is to pay tuition, $60. Senatorial scholarships not filled can be assigned to students from other localities at the discretion of the Faculty; they are open to students in all courses.

Early application should be made for these scholarships. They will be reserved for those respective towns and districts until August 1 of each year, after which they may be otherwise assigned for the year.

These scholarships are given for the purpose of aiding deserving students, and will be withdrawn from those who use tobacco or intoxicating liquors, or show themselves not deserving. Janitorships, work on thefarm, etc., also furnish assistance to a considerable extent.

Expenses may be estimated as follows:

Tuition	Free	$60.00
Text-books	$10.00	20.00
Library and reading-room tax . . .	6.00	6.00
Room rent, including fuel	18.00 to	40.00
Board, $3 to $3.50 per week, for 35 weeks .	105.00 to	122.50
Total	$139.00	$248.50

Room rent is estimated on the supposition that two students occupy the same room.

Rooms may be obtained either furnished or unfurnished.

For further information, address President Charles S. Murkland, or Prof. C. M. Weed, Secretary of the Faculty.

AGRICULTURAL EXPERIMENT STATION

This department of the college is provided for by the national government, at an annual expense of fifteen thousand dollars.

The act of congress provides,—

That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping, as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective states or territories.

NESMITH HALL

Nesmith Hall, a brick building two stories in height, is used for the work of the Agricultural Experiment Station. It contains offices and working rooms, a reference library, a chemical laboratory, a bacteriological and microscopical laboratory, and an agricultural museum.

BOARD OF CONTROL

Hon. GEORGE A. WASON, *President*	New Boston.
Pres. CHAS. S. MURKLAND, *ex-officio*	Durham.
CHARLES W. STONE, A. M., *Secretary*	East Andover.
Hon. JOHN G. TALLANT	Pembroke.
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STATION COUNCIL

CHARLES S. MURKLAND, A. M., Ph. D., *President and Acting Director.*
CHARLES H. PETTEE, A. M., C. E., *Meteorologist.*
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RUEL SEABURY ALDEN, B. S., *Farm Superintendent.*
LEIGH HUNT, B. S., *Assistant Horticulturist.*
CHARLES D. HOWARD, B. S., *Assistant Chemist.*
CLEMENT S. MORRIS, *Clerk.*

PRIZE RECORD FOR 1896

SMYTH PRIZES

GIVEN BY HON. FREDERICK SMYTH, OF MANCHESTER, N. H.

Speakers:
1st. WALTER F. BUCK.
2d. RENA E. YOUNG.
3d. JAMES A. FOORD.

Readers:
1st. HARRISON E. CLEMENT.
2d. EVELYN JENKINS.

BAILEY PRIZE

GIVEN BY DR. C. H. BAILEY, OF GARDNER, MASS., AND E. A. BAILEY, B. S., OF WINCHENDON, MASS.

LEWIS H. KITTREDGE.

ERSKINE MASON MEMORIAL PRIZE

LEWIS H. KITTREDGE.

ENTRANCE EXAMINATION PAPERS*

I. ENGLISH

The composition should be correct in spelling, grammar, and punctuation, and should show a clear purpose and an orderly method.

1. Write at least three pages on one of the following subjects:
   (1.) The Combat between Sohrab and Rustum.
   (2.) Sir Roger at the Play.
   (3.) The School Days of David Copperfield.
2. Correct the errors in the following sentences:
   (1.) The boy stood on the burning deck,
   Whence all but he had fled.
   (2.) I am going and see him this afternoon.
   (3.) He had n't seen what he had ought to do.
   (4.) Get up on to the platform.
   (5.) Try and read as many a good book as you can.
   (6.) I guess he will resign, for he told he was going to.
3. Which is the right expression:

He felt badly at his loss, or, He felt bad at his loss. If you substitute "discouraged" for "badly" or "bad" in the above, what part of speech will it be?

II. AMERICAN HISTORY

1. Give a brief account of the conquest of Peru.
2. What nations held territory in North America during the seventeenth century? What did each nation hold?
3. Give an account of King Philip's War.
4. Give an outline of the French and Indian War.

*Given as specimens of average papers.

5. Give a brief but comprehensive account of the Siege of Yorktown (1781).

6. Give a brief account of the adoption of the Constitution.

7. Give the causes and results of the Mexican War.

8. Give a brief account of each acquisition of United States territory.

9. Give an account of the principal military operations during the year 1864.

10. Explain the Emancipation Proclamation and the Alabama claims.

III. PHYSICAL GEOGRAPHY

1. Name the principal mountain chains of North America and South America. Give the situation of each.

2. Classify volcanoes. Locate and give an account of some of the principal ones.

3. Describe the Arctic current; the Japan current; and the equatorial currents of the Atlantic and the Pacific.

4. What are isothermal lines? If the earth were divided by isothermal lines into six zones, what would be included in each zone?

5. Draw a map of the United States and place upon it the isothermal lines which would pass through Central New Hampshire.

6. Give a comprehensive account of the St. Lawrence basin.

IV. ARITHMETIC

1. Reduce $\frac{12012}{103740}$ to its lowest terms.

2. Divide $\frac{3}{2}$ of $\frac{5}{6}$ by $\frac{\frac{5}{3}}{\frac{4}{6}}$ and subtract the quotient from $\frac{2\frac{1}{2}}{4-\frac{2}{3}}$.

3. How many hectares in a rectangular piece of land 500 meters long and 25 meters wide?

4. The population of a certain city is 100,000. It has gained 20,000; what has been the gain per cent.?

5. Extract the square root of $\frac{6\frac{1}{4}}{2\frac{1}{4}}$ to five decimal places.

6. If 4 men build 19 rods of wall in $2\frac{1}{2}$ days, in how many days will 7 men build 20 rods?

7. A, B, and C formed a partnership, and cleared $20,000. A put in $8,000 for 4 months, and then added $2,000 for 6 months; B put in $16,000 for 3 months, and then withdrawing half his capital, continued the remainder for 5 months longer; C put in $13,500 for 7 months. How divide the profits?

8. Find the simple, the annual, and the compound interest on $1,000 for 2 years, 5 months, and 7 days, at 6 per cent.

V. ALGEBRA

1. Define algebra, formula, coefficient, power, root, exponent, radical, term, factor, similar quantities.

2. From $3ax^2-(4a-2x)(x+2x)+a[y-(a+2y)]$ subtract $5a(x-y)+3a^2-2x^2(a+1)$.

3. Multiply $a^2x^{-\frac{1}{3}}-3x$ by $b+2x^{-2}$.

4. Divide $4a^2y^3x^{\frac{2}{3}}by-2a^3yx^2$.

5. $4x-5y=10$ and $3x+12y=7$. Solve for x and y.

6. Factor a^3-x^3; a^3+x^3; and a^4-x^4.

7. The sum of two numbers is a, and their difference is b. What are the numbers?

8. Multiply $\sqrt{-x}$, $-\sqrt{-y}$, $-\sqrt{y}$, and $\sqrt{y}$.

9. $\sqrt{x-16}=8-\sqrt{x}$. Solve for x.

VI. PLANE GEOMETRY

1. Define geometry, proposition, theorem, problem, axiom, postulate, corollary, scholium, right angle, perpendicular, parallel, magnitude, and form.

2. Define trapezoid, rhombus, regular polygon, apothem, sector of a circle, and segment of a circle. Name and explain the different kinds of triangles.

3. Give expressions for the circumference and area of a circle. State the relations existing between similar areas.

4. Demonstrate that if a perpendicular be erected at the middle of a line, any point in that perpendicular is equally distant from the extremities of the line; also that any point

without is nearer the extremity on its own side of the perpendicular.

5. Demonstrate that if two lines are cut by a third, making the sum of the interior angles on the same side of the secant line equal to two right angles, the two lines are parallel.

6. Demonstrate that in the same or equal circles two incommensurable arcs are to each other as the angles which they subtend at the centre.

7. Demonstrate that the opposite sides of a parallelogram are equal.

8. Demonstrate that triangles mutually equiangular are similar.

9. Construct a fourth proportional to three lines.

CATALOGUE OF GRADUATES.

NOTE.—The arrangement is: *(a)* Name in full. *(b)* Degrees taken. *(b)* Residence at time of entering college. *(d)* Occupation, etc. *(e)* Present residence. * Dead.

1871.

William Preston Ballard, B. S., Concord. Farmer. *Concord.*
Lewis Perkins, B. S., Hampton. Railroad contractor. *North Adams, Mass.*
Charles Henry Sanders, B. S., Penacook. Merchant. *Penacook.*

3—

1872.

Edwin Bartlett, B. S., Bath.
Frank Alexander White, B. S., Bow. Farmer and surveyor. *Bow. P. O. Box* 431, *Concord, N. H.*

2—

1873.

Frederick Erasmus Eldredge, B. S., Kensington.
James Fred Smith, B. S., A. M. (Dartmouth, 1885), Principal Iowa College Academy. *Grinnell, Iowa.*
Charles Henry Tucker, B. S., Plaistow. Woodworker. 24 *Highland Street, Amesbury, Mass.*

3—

1874.

Millard Fillmore Hardy, B. S., Nelson. Graduated Theo. Inst., Ct., 1878. Clergyman. *Townshend, Vt.*
Henry Abbott Sawyer, B. S.,* North Weare.

2—*1

1875.

Walter Herman Aldrich, B. S., M. D. (Univ. N. Y. City, 1880), Troy. Physician. *Marlborough.*
Frank Pierce Curtis, B. S., Stoddard. Manager of Store. *Greenfield, Mass.*

Frank Veranus Emerson, B. S., Lebanon. Manager Emerson Edge Tool Co. *East Lebanon.*

Charles Webster Hardy, B. S., M. D. (Mo. Med. Coll., 1881), Marlborough. Physician. *Waterville, Kan.*

Harvey Jewell, B. S., Winchester. Farmer. *Winchester.*

Charles Ormille Leavitt, B. S.,* Lebanon.

John Loney McGregor, B. S., D. D. S. (Phila. Dental Coll., 1877), M. D. (Dartmouth, 1883), Whitefield. Physician. *Whitefield.*

Eliel Peck, B. S., Lebanon. Merchant. *Kimball, Minn.*

Ira William Ramsey, B. S., Walpole. Farmer. *Walpole.*

Orlando Leslie Seward, B. S., Keene. Architect. *Keene.*

Emery Mason Willard, B. S., Harrisville. Druggist, with G. S. Cheney & Co., 15 Union St., Boston, Mass.
109 *Hewlett St., Roslindale, Mass.*
11—*1

1876.

Herbert Cyril Aldrich, B. S., Troy. Insurance and Real Estate. *Keene.*

Edmund Lawson Brigham, B. S., Jaffrey. Mechanic. *Clinton, Mass.*

Joseph Warren Butterfield, B. S., Westmoreland. Farmer. *North Montpelier, Vt.*

Arthur Frank Chamberlain, B. S., Westmoreland. General Salesman for Michigan. Edson, Keith & Co., Chicago.
6542 *Kimback Ave., Chicago, Ill.*

Anson Ballard Cross, B. S., Holyoke, Mass. Railroad Contractor, with Vandegrith & Jacobs, Philadelphia. *Wilmington, Vt.*

Warren Webster Kimball, B. S., Troy. E. P. Kimball & Son, General Store. *Troy.*

Daniel Deeth Parker, B. S., Fitzwilliam. Manufacturer. *Gardner, Mass.*
7—

1877.

Rollin Kirk Adair, B. S., Indian Territory. Farmer. *Locust Grove, Cherokee Nation, Indian Ter.*

Homer Brooks, B. S., M. D., (N. Y. Hom. Med. Coll., 1881),* Franconia.

John Washington Carson, B. S., Mont Vernon. Farmer. *Francestown.*

Charles Otto Chubert, B. S.,* Troy.

Charles Albert Edwards, B. S., LL. B.,* (State Univ., Iowa, 1880), Keene.

William Francis Flint, B. S., Richmond. Farmer. *Winchester.*

Clinton Camillus Hall, B. S., Westmoreland. Farmer. *East Westmoreland.*

John Goodrich Henry, B. S., M. D., (Dartmouth, 1880), Chesterfield. Physician. *Winchendon, Mass.*

Charles Pitkin Hollister, B. S., North Montpelier, Vt. Farmer. *North Montpelier, Vt.*

George Mirick Holman, B. S., M. D., Fitchburg, Mass. Instructor in Bryant & Stratton's Commercial College. *Boston, Mass.*

Charles Appleton Hubbard, B. S., Troy. Chief Clerk, Accounting Department, Receivers of the Union Pacific Railway System, Boston. *Newton Centre, Mass.*

Charles Augustus Wheeler, B. S., East Calais, Vt. Farmer and Bee-keeper. *Bracken, Corral Co., Texas.*

Everard Whittimore, B. S., Fitzwilliam. Agent, New York Life Insurance Co. *Hudson, Mass.*

13—*3

1878.

Ezra Eastman Adams, B. S., Manchester.

Elmer Kilburn, B. S., C. E.,* Marlow.

Charles Edward Record, B. S., Fitchburg, Mass. Contractor and Builder. *Leominster, Mass.*

3—*1

1879.

Charles Hardy Bailey, B. S., M. D., (Dartmouth, 1881). Physician. 39 *East Broadway, South Gardner, Mass.*

Richard Clinton Chapin, B. S., Chicopee, Mass. Agent for Nonotuck Paper Company. *Holyoke, Mass.*

Lucius M. Cragin, B. S., Lempster. Farmer and Surveyor. Superintendent of Schools, 1890–'95. *Springfield, Vt.*

Nathaniel Cutter Holmes, B. S.,* Amherst.

Fred Charles Parker, B. S., Lempster. Merchant. *Acworth.*

George Henry Wilkins, B. S., M. D., (N. Y. Hom. Med. Coll., 1883), Amherst. Physician. *Palmer, Mass.*

6—*1

1880.

Charles Harvey Hood, B. S., Derry. Milk Contractor. H. P. Hood & Sons, Boston, Mass.
20 *Highland Ave., Somerville, Mass.*
1—

1881.

Edwin Thomas Aldrich, B. S., Troy. With G. H. Aldrich & Son, General Insurance Agents. *Keene.*
Henry Lyman Barnard, Troy. Clerk. *Troy.*
George Jordan Boardman, B. S.,* Lawrence, Mass.
Edwin Franklin Bristol, B. S., Harwinton, Conn. Mechanic. *Ascutneyville, Vt.*
Artemas Terald Burleigh, B. S. Farmer. *Franklin.*
Frank Dana Ely, B. S., Cavendish, Vt. Business. *Cavendish, Vt.*
Sanford Eugene Emery, B. S., LL. B., (Albany Law School, 1886), Proctorsville, Vt. Lawyer. Postmaster. *Proctorsville, Vt.*
Charles Herbert Hazen, B. S., Hartford, Vt. Farmer. *Bethlehem.*
Frank Marston, B. S., Hartford. Vt. Merchant. *Olcott, Vt.*
William Augustus Megrath, B. S., M. D., (Dartmouth, 1885), Cavendish, Vt. Physician. *Loudon.*
Fred Townsend Stanton, B. S., Strafford. Farmer. *Strafford Corner.*
Victor Hugo Stickney, B. S., M. D., (Dartmouth, 1883), Tyson, Vt. Physician. President Electric Power & Coal Co. Vice-president First National Bank. *Dickinson, N. Dak.*
Samuel Austin Wallace, B. S., Ph. G., (Boston School of Pharmacy, 1886), West Hartford, Vt. Druggist. *Crookston, Minn.*
George Herbert Whitcher, B. S., Strafford. Professor of Agriculture and Director of Experiment Station (1887–'94). General Agent Bowker Fertilizer Co., Boston. *Durham.*
14—*1

1882.

Harvey Lincoln Boutwell, B. S., LL. B. (Boston Univ., 1886), Hopkinton. Lawyer, 209 Washington St., Boston.
37 *Peirce St., Malden, Mass.*
Dana Justin Bugbee, B. S., North Pomfret, Vt. Agent for Publishers. *North Pomfret, Vt.*

Robert Fletcher Burleigh, B. S., M. D., (Dartmouth, 1887), Franklin. Physician. *Rochester.*

La Forrest John Carpenter, B. S., Surry. *Cliff St., Malden, Mass.*

Edwin Preston Dewey, B. S., Hanover. Civil Engineer. *Pasadena, Cal.*

George Andrew Loveland, B. S., LL. B., (Univ. of N. Y. 1886), Norwich, Vt. Observer and Section Director, U. S. Weather Bureau. *Lincoln, Neb.*

John Wright Mason, B. S., Hanover.

Harlan Addison Nichols, B. S., Derry. County Physician. *Fort Stockton, Texas.*

Frank Elmer Thompson, B. S., Stark. Vice-president and Treasurer, Blackwater Lumber Co. *Davis, W. Va.*

9—

1883.

Elmore Ferdinand Arnold, B. S., M. D. (Univ. City of N. Y., 1885), Londonderry, Vt. Physician. *New York, N. Y.*

Frank Landor Bigelow, B. S., Proctorsville, Vt. Instructor in Mathematics and Sciences, Goddard Seminary, Barre, Vt., 1883–'86. Business. *Rutland, Vt.*

Frederick Stocks Birtwhistle, B. S., Troy. Electrical Engineer, Foreign Dept., General Electric Co., 44 Broad St., New York. *Troy.*

Noice D. Bristol, B. S., Hawinton, Conn. Clergyman.

Fred Plummer Comings, B. S., Lee. Trustee 1891—. Principal High School, South Yarmouth, Mass. *Lee.*

Frank Harry Follansbee, B. S., Canaan. Railway Mail Clerk. *Enfield.*

Adams Clark French, B. S., Franklin Falls.

James Edgar Gay, B. S., Tunbridge, Vt. Partner, Gay Brothers, Cavendish Woolen Mills. *Cavendish, Vt.*

Elmer Daniel Kelley, B. S., Franklin Falls. Farmer and Market-Gardener. *Franklin Falls.*

Alvah Benjamin Morgan, B. S., Canaan.

William Lincoln Whittier, B. S., Deerfield. Farmer and Manufacturer of Lumber. *Deerfield Centre.*

Charles Minot Woodward, B. S., Hanover. Instructor in Agriculture, 1883–'84. Teacher of Science, High School. *Corsicana, Tex.*

12—

1884.

Ernest Smith Cummings, B. S., * Lee.

Fred Carlos Davis, B. S., South Reading, Vt. Lawyer. Clerk and Attorney, Springfield Electric Railway Co.
Springfield, Vt.

Sylvester Miller Foster, B. S., Riverhead, N. Y. With N. W. Foster & Son, General Insurance Agents. Secretary, Suffolk County Agricultural Society. Secretary and Treasurer, Riverhead Coal Co. *Riverhead, N. Y.*

Herbert Harvey Kimball, B. S., Hopkinton. Clerk, U. S. Weather Bureau. *Washington, D. C.*

Moses Bisbee Mann, B. S., Benton. Custom House Official.
74 *Upham St., Malden, Mass.*

George Milton Moore, Plymouth, Vt. Insurance Agent.
Tyson, Vt.

Ziba Amherst Norris, B. S., Lyme. Norris Bros., Groceries and Provisions, 1673–79 Washington St., Boston.
1677 *Washington St., Boston, Mass.*

Edwin Chapin Thompson, B. S., Lee. Observer, in charge U. S. Weather Bureau. *Sandusky, Ohio.*

8—*1

1885.

George Ellsworth Adams, B. S., Weston, Vt. Merchant.
Vernal, Utah.

Ruel Seabury Alden, B. S., Lyme. Superintendent of College Farm. *Durham.*

Walter Eugene Angier, B. S., C. E. (Dartmouth, 1887), West Swanzey.

Edward Alonzo Bailey, B. S., West Swanzey. Attendant in Insane Asylum. *Winchendon, Mass.*

Phillips Greenleaf Bickford, B. S., Lyme.

Andrew Walter Brill, B. S., Riverhead, L. I. Seedsman and Florist. *Hampstead, Queens Co., N. Y.*

Paul Cuff Brooks, B. S., Boston, Mass.

Frank Jay Emerson, B. S., Epping. Clerk, Great Falls House.
Somersworth.

Allen Hazen, B. S., Hartford, Vt. Consulting Engineer.
85 *Water St., Boston, Mass.*

George Mayo Mullens, B. S., Londonderry. Farmer.
North Londonderry.

Albert Henry Wood, B. S., Lebanon. Associate Professor of Agriculture, 1890–'94. General Agent, L. B. Darling Fertilizer Co., Pawtucket, R. I. *Durham.*

11—

1886.

Frank Albert Davis, B. S., South Lee. Observer, U. S. Weather Bureau. Student, Boston University School of Medicine. *Boston, Mass.*

James Ellsworth Harvey, B. S., Surry. Photographer. *Clinton, Mass.*

Belezar Stoianoff Ruevsky, B. S., Sistova, Bulgaria. Veterinary Surgeon. *Sistova, Bulgaria.*

Madison Templeton Thurber, B. S., M. D., (Dartmouth, 1890). Webster. Physician. 95 *Savin Hill Avenue, Dorchester, Mass.*

Edward Hills Wason, B. S., New Boston. Lawyer. *Nashua.*

George Pillsbury Wood, B. S., Lebanon. Civil Engineer. City of Baltimore Topographical Survey. 922 *Equitable Building, Baltimore, Md.*

6—

1887.

William Sprague Currier, B. S., Norwich, Vt. In charge U. S. Weather Bureau Office. *Toledo, Ohio.*

Arthur Woodbury Hardy, B. S., C. E., (Dartmouth, 1889). Hopkinton.

George Albert Sanborn, B. S., Rochester. County Agent, California Perfume Co. *Rochester.*

Hiram Newton Savage, B. S., White River Junction, Vt. Member, Am. Soc., C. E. Engineer-in-Charge, Sweetwater Dam Irrigation and Domestic Water System; Chief Engineer, San Diego Land and Town Co.; Chief Engineer, National City and Otay Railway Co. *National City, Cal.*

Bion Leland Waldron, B. S., Strafford. Weather Bureau. *Louisville, Ky.*

5—

1888.

Melvin Burnside Carr, B. S., North Haverhill. With West End Street R. R., General Power Station. *Boston, Mass.*

Herbert Grant Davis, B. S., South Lee. Electrical Engineer, General Electric Co. *Lynn, Mass.*

Edwin Chandler Gerrish, B. S., Webster. Assistant Paymaster for Proprietors of the Locks and Canals on the Merrimack River. *Lowell, Mass.*

William Nelson Hazen, B. S., C. E., (Dartmouth, 1890), Hartford, Vt. Designing Engineer, Berlin Iron Bridge Co. *East Berlin, Conn.*

Edward David O'Gara, Hanover. Farmer. *Hanover.*

George Elmer Porter, B. S., M. D., (Dartmouth, 1892), Hartford, Vt. Physician. *Marengo, Wayne Co., N. Y.*

George Jonathan Sargent, B. S., Canterbury. Civil Engineer. *39 No. Main St., Concord.*

John Warren Smith, B. S., Grafton. Observer U. S. Weather Bureau, Boston. *Lexington, Mass.*

George Elwin Walker, B. S., Littleton. Farmer. *Littleton.*

9—

1889.

Fred Harvey Colby, B. S., Hopkinton. Fruit Grower. *Prosser, Wash.*

Linwood Carroll Gillis, B. S. Editor and Publisher, Hanover *Gazette;* Proprietor, Dartmouth Press. *Hanover.*

Louis Jerome Hutchinson, B. S. * Norwich, Vt.

John Lawrence Norris, B. S., Lyme. Norris Bros., Groceries and Provisions, 1673-79 Washington St., Boston. *6 Worcester Sq., Boston, Mass.*

Charles Walter Earl Scott, B. S., Winchester. *Winchester.*

David Elmer Stone, B. S., Hartford, Vt. Superintendent W. H. Bowker's Farm. *Barre, Mass.*

Fred Washburne, B. S., West Springfield. Foundry Dept., The Sargent Co., New Haven. *96 Chapel St., New Haven, Ct.*

7—* 1

1890.

John Young Jewett, B. S., C. E. (Dartmouth, 1895) Gilford. Civil Engineer, Dam and Aqueduct Dept., Metropolitan Water Board, Boston. *11 Prescott St., Clinton, Mass.*

Joseph Franklin Preston, B. S., Hanover. Clerk. *Boston, Mass.*

Elihu Quimby Sanborn, B. S., Webster. Machinist. *Contoocook.*

Clarence Ira Slack, B. S., Norwich, Vt. With Vermont Marble Co. *West Rutland, Vt.*

4—

1891.

Ernest Gowell Cole, B. S., Hampton. Partner, J. A. Lane & Co., General Store. *Hampton.*

Russell Marden Everett, B. S., Chester. Teacher of Mathematics, Broaddus Classical and Scientific Institute. *Clarksburg, W. Va.*

Edward Payson Stone, B. S., Canaan Centre. Chemist, Magnolia Plantation, Lawrence, La. *Canaan Centre.*

3—

1892.

Percy Lovejoy Barker, B. S., C. E. (Dartmouth, 1894), Milford. Civil Engineer, Boston & Maine R. R. 16 *Bancroft St., Worcester, Mass.*

Fred Driggs Fuller, B. S., Hanover. Assistant Chemist, New York Agricultural Experiment Station. *Geneva, N. Y.*

Arthur Bennerzett Hough, B. S., Lebanon. Farmer. *Lebanon.*

Edward Munroe Stone, B. S., C. E. (Dartmouth, 1894), Marlborough. Civil Engineer. With L. W. Burt, C. E. 39 *Pearl St., Hartford Ct.*

4—

1893.

Wilton Everett Britton, B. S., Keene. Horticulturist, Connecticut Agricultural Experiment Station. 805 *Orange St., New Haven, Ct.*

Frank John Bryant, B. S., Enfield. Teacher. *Lebanon.*

Charles Elbert Hewitt, B. S., M. M. E. (Cornell, 1895), Hanover. Electrical Engineer and Superintendent Hyer-Sheehan Electric Motor Co., Newburgh. 123 *Third St., Newburgh, N. Y.*

Charles Lincoln Hubbard, B. S., M. E. (1895), Fitzwilliam. Mechanical Engineer, with Prof. S. H. Woodbridge, 85 Water St., Boston. *Needham, Mass.*

Orrin Moses James, B. S., Northwood. Civil Engineer. *Northwood Narrows.*

Arthur Whitmore Smith, B. S., M. S., (Wesleyan Univ., 1895), Norwich, Vt. Expert Physical Assistant, Investigation of Foods, U. S. Dept. of Agriculture. 246 *High St., Middletown, Ct.*

6—

1894.

Bert Sargent Brown, B. S., Hanover. Foreman. *St. Johnsbury, Vt.*

Fred Willis Gunn, B. S., Keene. Electrician, Fall Mountain Paper Co. *Bellows Falls, Vt.*

Frederick William Howe, B. S., Hollis. Assistant in Chemistry. *Institute of Technology, Boston, Mass.*

3—

1895.

Frank Stanley Adams, B. S., Gilsum. Editor and Proprietor, Rhode Island *Pendulum.* *East Greenwich, R. I.*

Frank Clifton Britton, B. S., Keene. Post-Graduate Student, Cornell University. *Ithaca, N. Y.*

Henry Elmer Hill, B. S., Plainfield, Vt. *Plainfield, Vt.*

Charles Arthur Trow, Mt. Vernon. Post-Graduate Student. *Durham.*

4—

1896.

Lewis Harris Kittredge, B. S., Keene. With New York Belting and Packing Co. *Passaic, N. J.*

1—

SUMMARY.

Graduates, 1871–'96, inclusive	157
Agriculturists	29
Business pursuits	43
Chemists	3
Clergymen	2
Civil, Mechanical, and Electrical Engineers	14
Editors	2
Lawyers	4
Manufacturers and Mechanics	8
Physicians	14
Post-Graduate Students	3
Teachers	6
Unclassified	3
Unknown	10
Weather Bureau	7
Twice classified	1
Dead	10

CALENDAR.

1896.

JULY.

S.	M.	T.	W.	T.	F.	S.
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
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AUGUST.

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SEPTEMBER.

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OCTOBER.

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NOVEMBER.

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29	30					

DECEMBER.

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1897.

JANUARY.

S.	M.	T.	W.	T.	F.	S.
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FEBRUARY.

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MARCH.

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APRIL.

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MAY.

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JUNE.

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1897.

JULY.

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AUGUST.

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SEPTEMBER.

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OCTOBER.

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NOVEMBER.

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DECEMBER.

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COLLEGE CALENDAR.

1896.

September	3.	First term of fifteen weeks began—Thursday morning.
December	16.	First term ends—Wednesday night.

Winter Vacation of Four Weeks.

1897.

January	14.	Second term of ten weeks begins—Thursday morning.
March	24.	Second term ends—Wednesday night.

Spring Vacation of One Week.

April	1.	Third term of ten weeks begins—Thursday morning.
June	7–8.	Examinations for admission, beginning Monday, at 2 p. m.
June	8.	Annual examinations close—Tuesday noon.
June	8.	Smyth Prize Reading and Speaking—Tuesday evening.
June	9.	Commencement—Wednesday.

Summer Vacation of Thirteen Weeks.

September	7–8.	Examinations for admission—beginning Tuesday at 9 a. m.
September	9.	First term of fifteen weeks begins—Thursday morning.
December	22.	First term ends—Wednesday night.

Winter Vacation of Three Weeks.

1898.

January	13.	Second term of ten weeks begins—Thursday morning.
March	23.	Second term ends—Wednesday night.

CATALOGUE

OF THE

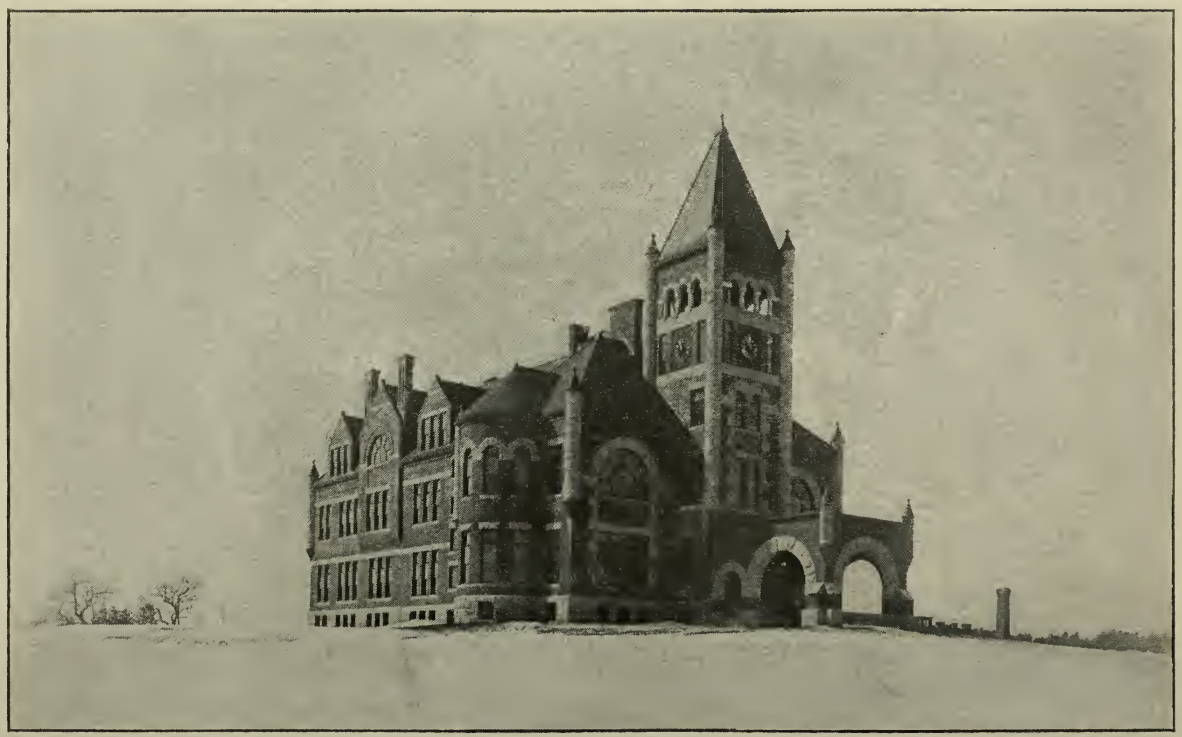
New Hampshire College

OF

Agriculture and the Mechanic Arts

1897-8

THE
JOHN CRERAR
LIBRARY,



THOMPSON HALL.

CATALOGUE

OF THE

NEW HAMPSHIRE COLLEGE

OF

AGRICULTURE AND THE MECHANIC ARTS

1897-1898

MANCHESTER
ARTHUR E. CLARKE, PUBLIC PRINTER
1897

97

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CATALOGUE

FOUNDATION AND ENDOWMENT.

At the session of the legislature of New Hampshire in 1866, an act was passed establishing the "New Hampshire College of Agriculture and the Mechanic Arts" on the basis of the congressional land grant, and authorizing its location in Hanover and in connection with Dartmouth College.

In accordance with this act, the institution was organized, under a board of trustees appointed partly by the governor and council and partly by the corporation of Dartmouth College.

The act of congress, by virtue of which it was established, provides that its "leading objects shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts . . . in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

An act of congress, approved August 30, 1890, provides an additional appropriation, which for the current year is twenty-three thousand dollars. This money is to be applied "to instruction in Agriculture, the Mechanic Arts, the English Language, and the various branches of Mathematical, Physical, Natural, and Economic Science, with special reference to their applications in the industries of life, and to the facilities for such instruction."

At the session of the legislature of New Hampshire in 1891, acts were passed severing the connection with Dartmouth College, removing the New Hampshire College from Hanover to Durham, accepting the Benjamin Thompson estate, and providing one hundred thousand dollars to be used with certain other sums in the erection of buildings.

The Benjamin Thompson estate was then of the value of about four hundred thousand dollars. Accumulating at four per cent compound interest, it will be available as an endowment in 1910.

At the session of the legislature of New Hampshire in 1893, an act was passed appropriating thirty-five thousand dollars for completing and furnishing the buildings. These buildings have been finished, furnished, and supplied with apparatus. The New Hampshire College has completed the fourth year of work in its new location.

The college is carrying out the provisions of the acts of congress, by giving a practical and scientific education which is of use in all the professions and industrial pursuits, by means of the following courses of study:

1. Courses in Agriculture:
    - A. Four Years' Course.
    - B. Two Years' Course.
    - C. Ten Weeks' Winter Course
    - D. Four Weeks' Dairy Course.
    - E. Non-resident Course.
2. Courses in the Mechanic Arts:
    - A. Mechanical Engineering Course.
    - B. Electrical Engineering Course.
    - C. Technical Chemistry Course.
3. General Course.
4. Preparatory Course.

FACULTY.

CHARLES S. MURKLAND, A. M., Ph. D., *President and Professor of English Language and Literature.*

CHARLES H. PETTEE, A. M., C. E., *Dean and Professor of Mathematics and Civil Engineering.*

CLARENCE W. SCOTT, A. M., *Professor of History and Political Economy.*

FRED W. MORSE, B. S., *Professor of Organic Chemistry.*

CHARLES L. PARSONS, B. S., *Professor of General and Analytical Chemistry.*

CLARENCE M. WEED, D. Sc., *Professor of Zoology and Entomology.*

ALBERT KINGSBURY, M. E., *Professor of Mechanical Engineering.*

FRANK WILLIAM RANE, B. Ag., M. S., *Professor of Agriculture and Horticulture.*

HOLLIS C. CLARK, 1st Lieut. 23d U. S. Infantry, *Professor of Military Science and Tactics.*

HERBERT H. LAMSON, M. D., *Instructor in Botany.*

ARTHUR F. NESBIT, A. M., B. S., *Instructor in Physics and Electrical Engineering.*

CHARLES H. KINNE, Ph. D., *Instructor in Modern Languages.*

JOSEPH H. HAWES, *Instructor in Drawing.*

ERNEST B. MacCREADY, B. S., *Instructor in Chemistry and Mineralogy.*

JOHN N. BROWN, *Foreman of Machine Work.*

GEORGE H. FURBISH, *Foreman of Wood Work.*

C. H. WATERHOUSE, *Instructor in Dairying and Superintendent of Creamery.*
EDWIN H. FORRISTALL, B. S., *Farm Superintendent.*
EDWARD E. RUSSELL, *Engineer and Curator of Buildings.*
CLEMENT S. MORRIS, *Purchasing Agent.*
Mrs. M. E. WIGGIN, *Matron of Thompson House.*

STUDENTS.

a—Agricultural Course; *c*—Course in Technical Chemistry; *e-e*—Electrical Engineering Course; *g*—General Course; *m-e*—Mechanical Engineering Course. Sophomores and Juniors in the Engineering Courses are designated by *e* only. Freshmen are not classified in courses.

GRADUATE STUDENTS.

Name.	Residence.	Room.
Dearborn, Ned	*Tilton.*	Mr. Sawyer's.
B. S. (Dartmouth) 1891. Biology.		
Hayes, Leslie David,	*Durham.*	Mr. Hayes's.
B. S. 1897. Modern Languages. Political Science.		

UNDERGRADUATES.

SENIORS.

Name.	Course.	Residence.	Room.
Butterfield, Richard Cole	*a*	*Westmoreland.*	Q. T. V. Hall.
Buzzell, Helen	*g*	*Lee.*	Lee.
Caverno, Bernice Elizabeth	*g*	*Durham.*	Mr. Caverno's.
Corbett, Burton Albert	*a*	*Colebrook.*	Q. T. V. Hall.
Durgin, Alfred Caverly	*e*	*Lee.*	Lee.
Foord, James Alfred	*a*	*Walpole.*	Nesmith Hall.
Fullerton, John William	*m e*	*Somersworth.*	Q. T. V. Hall.
Given, Arthur	*c*	*Durham.*	Mr. A. Meserve's.
Hancock, Edward Henry	*m e*	*Belmont.*	Hoitt House.
Hayes, Mabel Lucy	*g*	*Durham.*	Mr. Hayes's.
Hirokawa, Tomokichi	*m e*	*Imabari, Japan.*	Prof. Pettee's.
Mathes, Harry Clinton	**a*	*Newmarket.*	DeMeritt Hall.
Moore, Herbert Fisher	*m e*	*Penacook.*	Q. T. V. Hall.
Morgan, Gerry Austin	*m e*	*Goffstown.*	DeMeritt Hall.
Richardson, Harry Putnam	*a*	*Milford.*	DeMeritt Hall.
Sanborn, Fred Dexter	*e e*	*Ashland.*	Hoitt House.
Simpson, Etta Lillian	**g*	*Durham.*	Mr. Simpson's.
Smith, Fred Webster	**a*	*Franklin Falls.*	Hoitt House.
Straw, Edson Albert	*g*	*Pittsfield.*	Nesmith Hall.
Tolles, Benjamin D.	*m e*	*Somersworth.*	Q. T. V. Hall.

*Partial course.

JUNIORS.

Name.	Course.	Residence.	Room.
Andrews, Herbert Prescott	*c	*Hollis.*	Thompson Hall.
Baker, Henry Clark	e	*So. Yarmouth, Mass.*	Mr. Furbish's.
Barnard, Harry Everett	a	*Nashua.*	"The Nashuway."
Clement, Harrison Edward	c	*Nashua.*	"The Nashuway."
Colby, Irving Atwell	e	*Exeter.*	"The Nashuway."
Demeritt, Edith Augusta	*e	*Durham.*	Mr. Demeritt's.
Demeritt, George Stickney	*e	*Dover.*	Mr. A. Meserve's.
Hayden, Willis Daniel Farley	a	*Hollis.*	DeMeritt Hall.
Hayes, Clarence Morrill	e	*Milton.*	Q. T. V. Hall.
Hayes, Fred Frost	*e	*Portsmouth.*	Hoitt House.
Horton, Frederic Libbey	*c	*Dover.*	Mr. A. Meserve's.
Hunt, William Elmer	c	*Nashua.*	"The Nashuway."
Jenkins, Evelyn	*g	*Lee.*	Lee.
Kenney, Lewis Hobart	e	*Pownal, Me.*	Prof. Wood's.
Norcross, Arthur Zebulon	a	*Rindge.*	"The Nashuway."
Putney, Harry Nelson	e	*Franklin.*	Hoitt House.
Wilson, John Ernest	e	*Hollis.*	DeMeritt Hall.

SOPHOMORES.

Bracy, William Hayes	e	*Somersworth.*	Mr. Furbish's.
Burnham, Fanny	g	*Durham.*	Mr. J. W. Burnham's.
Foye, Blanche Mary	g	*Durham.*	Mr. A. Meserve's
Huse, Edwin Sweetser	a	*Milton.*	Q. T. V. Hall.
Leavitt, Mabel Augusta	*g	*W. Stockbridge, Mass.*	Prof. Wood's.
Mark, Grace Agnes	g	*Gilsum.*	Thompson House.
Mathes, Charles Eliot Page	*g	*Durham.*	Mr. Mark Mathes's.
Muzzey, Harry Walter	e	*Tilton.*	Q. T. V. Hall.
Nelson, Edward Emil	e	*Nashua.*	"The Nashuway."
Penneo, George Jay	a	*Hampstead.*	Mr. Caverno's.
Pettee, Alvena	g	*Durham.*	Prof. Pettee's.
Philbrick, John	e	*Seabrook.*	DeMeritt Hall.
Plummer, Bard Burge, Jr.	e	*Milton.*	Q. T. V. Hall.
Robertson, Marie Livingston	g	*Galeton, Penn.*	Prof. Parsons's.
Runlett, Harold Morrison		*Durham.*	Mr. Runlett's.
Stillings, Charles Edwin	c	*Somersworth.*	Mr. Furbish's.
True, Clarence Merrill	e	*Amesbury, Mass.*	Prof. Wood's.
Wright, Robert Morrill	e	*Hill.*	Q. T. V. Hall.

FRESHMEN.

Name.	Residence.	Room.
Calderwood, Henry Harold	*Nashua.*	"The Nashuway."
Cleaveland, Guy Mix	*Nashua.*	"The Nashuway."

*Partial course.

Name.	Residence.	Room.
Courser, Charles Henry	*Warner.*	DeMeritt Hall.
Dorr, Alice Emerson	*Dover.*	35 Summer St., Dover.
Farwell, Harry Gilbert	*Keene.*	Dr. Grant's.
Gowen, Ella Gertrude	*Dover.*	15 Lexington St., Dover.
Grover, Fred Howard	*Portsmouth.*	Mr. A. Meserve's.
Hunt, Charles Lund	*Nashua.*	"The Nashuway."
Jewett, Edwin Price	*Lakeport.*	Q. T. V. Hall.
Keown, Robert McArdle	*Pomona, Fla.*	Prof. Rane's.
Lewis, Rutherford Burchard	*New York, N. Y.*	Mr. A. Meserve's.
Lyon, Elmer Eugene	*Wentworth.*	Mr. A. Meserve's.
Rollins, Norman Allen	*Concord.*	DeMeritt Hall.
Shipley, Walter Noah	*Nashua.*	"The Nashuway."
Staniels, Charles Tuttle	*Concord.*	Q. T. V. Hall.
Taft, Deforest Reed	*Winchester.*	Mr. A. Meserve's.
Thompson, Alfred Giles	*Franklin Falls.*	DeMeritt Hall.
Twombly, Winfield Hancock	*Madbury.*	Mrs. Davis's.

SPECIAL STUDENTS.

Name.	Residence.	Subject.
Fiske, William F.	*Mast Road.*	Biology.
Harvey, Anna M.	*Newmarket.*	Biology.
Locke, John D.	*Haverhill.*	Biology.
Keniston, Eugene	*Newmarket.*	French, Mathematics.
Smith, Jennie S.	*Newmarket.*	Biology.
Wentworth, Charles	*Durham.*	French, Mathematics.

PREPARATORY COURSE.

Name.	Residence.	Room.
Bergeron, George Arthur	*Hanover Center.*	Mrs. Davis's.
Buzzell, Maurice Tuttle	*Lee.*	Mr. Buzzell's.
Church, John Edwin	*Durham.*	Mr. Andrews's.
Hadley, Frank Lurlin	*Hanover Center.*	Mrs. Davis's.
Holt, Fred Alfred	*Lyndeborough.*	DeMeritt Hall.
Runlett, Eugene Pierce	*Durham.*	Mr. Runlett's.
York, Walter Israel	*Durham.*	Mr. York's.

TWO YEARS' COURSE IN AGRICULTURE.

SECOND YEAR.

Martin, Charles Wesley	*Durham.*	Mr. Hunt's.
Weeks, William Robinson	*Greenland.*	Mrs. Weeks's.
Wheeler, George Henry	*Temple.*	Mrs. Davis's.

FIRST YEAR.

Name.	Residence.	Room.
Chamberlain, Roy Albert	*East Jaffrey.*	Dr. Grant's.
Dimick, Thomas Edwin	*Lyme Center.*	Mr. S. Hoitt's.
Fernald, William Thomas	*Madbury.*	Mr. Fernald's.
Purinton, Alfred Dutton	*Durham.*	Mr. Otis's.
Stowell, George Abner	*Claremont.*	Mr. Sawyer's.
Stratton, Edwin Hartwell	*Hollis.*	"The Nashuway."

SUMMER SCHOOL OF SCIENCE.

Name.	Residence.
Bird, Anna L.	*Walpole, Massachusetts.*
Brown, Ophelia S.	*Tyngsboro, Massachusetts.*
Bunker, Mabel L.	*Durham, New Hampshire.*
Burr, B. G.	*Plymouth, New Hampshire.*
Campbell, Hattie M.	*Hill, New Hampshire.*
Coleman, Lydia Smith	*Newington, New Hampshire.*
Dana, Caroline R.	*Newark, New Jersey.*
Dickerson, Jennie L.	*Hill, New Hampshire.*
Fall, Mabel L.	*Somersworth, New Hampshire.*
Farnum, Inez M.	*Marlborough, New Hampshire.*
Harvey, Anna M.	*Newmarket, New Hampshire.*
Hawks, M. Clara	*Manchester, New Hampshire.*
Hayes, Martha E.	*Dover, New Hampshire.*
Hersey, Ella	*Franklin Falls, New Hampshire.*
Hersey, Lizzie M.	*Franklin Falls, New Hampshire.*
Higgins, Ella M.	*Marlborough, New Hampshire.*
Holden, Edith J.	*Reading, Massachusetts.*
MacClure, Viola E.	*Plymouth, New Hampshire.*
Magoon, Louise M.	*Manchester, New Hampshire.*
Maxwell, Alta B.	*Dover, New Hampshire.*
Murray, R. H.	*Worcester, Massachusetts.*
Patterson, Elizabeth	*Pawtucket, Rhode Island.*
Pierce, Carrie M.	*Worcester, Massachusetts.*
Pierce, Mary	*Dover, New Hampshire.*
Plummer, Alice C.	*Fitchburg, Massachusetts.*
Roby, Abbie	*New London, New Hampshire.*
Rogers, Ella H.	*Newport, New Hampshire.*
Rogers, Mabel E.	*Nashua, New Hampshire.*
Smith, Jennie S.	*Newmarket, New Hampshire.*
Stanton, Clara E.	*Somersworth, New Hampshire.*
Taggart, C.	*Manchester, New Hampshire.*
Twombly, Mary E.	*Dover, New Hampshire.*

Name.	Residence.
Tyler, Elizabeth E. M.	*Exeter, New Hampshire.*
Upton, Clara E.	*Nashua, New Hampshire.*
Winch, Nan E.	*Marlborough, New Hampshire.*
Young, Jennie M.	*Newmarket, New Hampshire.*

WINTER COURSES IN AGRICULTURE.

Davis, Amos	*Walpole, Maine.*
Purinton, Alfred D.	*Durham, New Hampshire.*
Richardson, E.	*Littleton, New Hampshire.*
Sullivan, Thomas F.	*Durham, New Hampshire.*
Woodward, Herbert L.	*Wilmot, New Hampshire.*

NON-RESIDENT COURSE IN AGRICULTURE.

Name.	Residence.
Cunningham, T. J.	*Hampton, Virginia.*
Doe, Catherine	*Salmon Falls, New Hampshire.*
Fernald, William L.	*Eliot, Maine.*
Killough, Harry	*Richmond, Kansas.*
Osborne, Alfred	*North Weare, New Hampshire.*
Purinton, A. A.	*Nashua, New Hampshire.*
Rengermann, William	*East Granby, Connecticut.*
Robb, George	*Tonganoxie, Kansas.*

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ADMISSION.

All candidates for admission to college must present satisfactory testimonials of good moral character.

Candidates for the Freshman class are examined in the following subjects:

I. Arithmetic, including the metric system.

II. Algebra through quadratic equations, including radicals, and fractional and negative exponents.

III. Plane Geometry.

IV. Physics.—Gage's Introduction to Physical Science, or Dolbear's Natural Philosophy, or an equivalent.

V. Botany.—Gray's Lessons, sections 1 to 15 (inclusive), and sections 18 and 19, or an equivalent, with some knowledge of classification, and experience in the analysis of our common flowering plants.

VI. Physical Geography.

VII. History of the United States.—Fiske's, or Johnston's, or an equivalent.

VIII. History of Greece.—Myers's larger work, or an equivalent.

IX. History of Rome.—Allen's Roman People, or an equivalent.

X. French.—Grammar: Translation of easy prose at sight.

XI. English.—Two sets of books are prescribed for preparation in English, one for reading, the other for more careful study. No candidate will be accepted in English whose work is notably defective in point of spelling, punctuation, idiom, or division into paragraphs. The examination will consist of two parts:

1. Reading.—A certain number of books will be set for reading. The candidate will be required to present evidence of a general knowledge of the subject matter, and to answer simple questions on the lives of the authors. The form of examination will usually be the writing of a paragraph or two on each of several topics to be chosen by the candidate from a considerable number—perhaps ten or fifteen—set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will call for only a general knowledge of the substance of the books. In place of a part or the whole of this test, the candidate may present an exercise book, properly certified by his instructor, containing compositions or other written work done in connection with the reading of the book. In preparation for this part of the requirement it is important that the candidate shall have been instructed in the fundamental principles of rhetoric.

The books set for this part of the examination will be:

In 1898, Milton's Paradise Lost, Books I-II; Pope's Iliad, Books I and XXII; the Sir Roger de Coverley Papers in "The Spectator"; Goldsmith's Vicar of Wakefield; Coleridge's Ancient Mariner; Southey's Life of Nelson; Carlyle's Essay on Burns; Lowell's Vision of Sir Launfal; Hawthorne's House of Seven Gables.

In 1899, Pope's Iliad, Books I, VI, XXII, and XXIV; Dryden's Palamon and Arcite; the Sir Roger de Coverley Papers in "The Spectator"; Goldsmith's Vicar of Wakefield; Coleridge's Ancient Mariner; De Quincey's Flight of a Tartar Tribe; Lowell's Vision of Sir Launfal; Hawthorne's House of the Seven Gables; Cooper's Last of the Mohicans.

In 1900, Dryden's Palamon and Arcite; Pope's Iliad, Books I, VI, XXII, and XXIV; The Sir Roger de Coverley Papers in "The Spectator"; Goldsmith's Vicar of Wakefield; De Quincey's Flight of a Tartar Tribe; Tennyson's Princess; Scott's Ivanhoe; Cooper's Last of the Mohicans; Lowell's Vision of Sir Launfal.

2. Study and Practice.—This part of the examination presupposes the thorough study of each of the works named in this division. In addition the candidate may be required to answer questions involving the essentials of English Grammar.

The books set for this part of the examination will be:

In 1898, Shakespeare's Macbeth; Burke's Speech on Conciliation with America; De Quincey's Flight of a Tartar Tribe; Tennyson's Princess.

In 1899, Shakespeare's Macbeth; Milton's Paradise Lost, Books I and II; Burke's Speech on Conciliation with America; Carlyle's Essay on Burns.

In 1900, Shakespeare's Macbeth; Milton's Paradise Lost, Books I and II; Burke's Speech on Conciliation with America; Macaulay's Essays on Milton and Addison.

Candidates for admission to the Preparatory class are examined in Arithmetic, including the metric system; Algebra to quadratics, not including radicals; English Grammar and Composition; Physical Geography, and the History of the United States.

Candidates for admission to the Two Years' Course in Agriculture are examined in Arithmetic, English Grammar (including spelling and writing), and the Geography and History of the United States.

Candidates for advanced standing are also examined in the studies that have been pursued by the class which they propose to enter.

A certificate from an academy or a high school will be accepted in place of an examination, upon any subject required for admission. Every certificate must state the amount of work done by the student, his proficiency, and the text-books used; and in case it is not evident that the student is thoroughly prepared, an examination will be required.

Certificate forms will be furnished on application.

The times for examination are the Monday afternoon and Tuesday before Commencement, and the Tuesday afternoon and Wednesday before the beginning of the first term. Candidates will first present themselves with their credentials on the first day of the examination. See Calendar.

DESCRIPTION OF STUDIES.

For the Courses of Study see page 32 et seq.

AGRICULTURE.

See also Horticulture.

1. Soils and Fertilizers. *Thirty exercises.*

The course deals with the relations of soils and fertilizers to each other and to plants. References: King's The Soil; Roberts's The Fertility of the Land.

2. Field Crops. *Fifteen exercises.*

The different groups of field crops (grasses, cereals, clovers, etc.) are each taken up and studied collectively and individually. The proper soils, preparation of seedbed, fertilizers, drainage, harvesting, profits, etc. References: Hunt and Morrow's Soils and Crops.

3. Stock Feeding. *Thirty exercises.*

Course 3 deals with the practical feeding of farm animals, including the composition of foods and the compounding of rations. It consists of twenty recitations and ten exercises in the stable.

4. Comparative Anatomy and Physiology of Domestic Animals. *Fifteen exercises.*

This course familiarizes students with the general external and internal organs of animals, their uses, etc. Lectures and recitations.

5. Chemistry of Plant Growth. *Forty-five exercises.*

The composition of plants at different stages of growth, and the conditions necessary for their development. This subject must be preceded by Chemistry courses 1, 2, and 3.

6. Food and Nutrition. *Twenty exercises.*

These subjects include the composition of foods, and the animal body; the assimilation of the former by the latter, and the principles underlying a rational diet. This subject should be preceded by Course 5.

7. Domestic Animals. (Breeds and Breeding.) *Twenty exercises.*

Lectures and recitations. References: Miles's "Stock Breeding," and Curtis's "Horses, Cattle, Sheep, and Swine," etc.

8. Dairying. *Twenty exercises.*

This course consists of practical and theoretical instruction in methods of modern dairying, including the general management of the dairy, the methods of milk analysis, the bacteriology of the dairy, the use of separators, the making of butter, and preparation of milk for the city market. References: Wing's Milk and its Products; Gurler's American Dairying.

9. Agricultural Seminary.
a. Sixty exercises. b. Forty exercises. c. Twenty exercises.

Discussion of current agricultural literature; experiment station bulletins, and study of various agricultural problems.

10. Practical work.

During the course, ten hours per week for two years, or its equivalent, is required in practical work, either on the farm or in the garden and nursery during the fall and spring; and in the barn, greenhouse, carpenter shop or machine shop during the winter. The object of this work is to familiarize the student with the application of a theoretical training. During the last, or senior, year most of this time can be taken up for thesis work, in which some original investigation is carried on, the results being presented for the graduating thesis, which may be published, if of sufficient interest.

BOTANY.

1. Structural Botany. *Thirty exercises.*

Lectures and laboratory work on the minute structure and physiology of plants, with special reference to the higher forms. *Open only to those who have taken the preparatory Botany.*

2. Plant Diseases. *Twenty exercises.*

A study by means of lectures and laboratory work of some of the more important fungous diseases of cultivated plants, and the means of preventing their injuries.

Open only to students who have completed Botany 1.

3. Advanced Course.

a. Forty-five exercises. b. Thirty exercises. c. Thirty exercises.

Open only to those who have shown special proficiency in Botany.

CHEMISTRY.

1. Inorganic Chemistry. *Forty-five exercises.*

Lectures and recitations on general theoretical chemistry, illustrated by experiments, charts, specimens, lantern views, etc. Solutions of chemical problems will be required.

2. Inorganic Chemistry. *Thirty exercises.*

Course 2 is a continuation of Course 1, but the time will be spent mainly on the metallic elements, their metallurgy, salts, etc.

Open only to students who have completed Course 1.

3. Organic Chemistry. *Twenty exercises.*

Course 3 will consist of lectures and recitations on the chemistry of the carbon compounds, together with the study of their properties by means of specimens.

Open only to students who have completed Course 1.

4. Qualitative Chemical Analysis.

Course 4 consists of laboratory practice, with occasional lectures. The student is expected to become proficient in the separation and detection of the common acids and bases, and to keep a full set of notes. He will have practice in the writing of reactions, and will fill out numerous slips containing questions bearing upon his work.

Open only to students who have completed Courses 1 and 2.

5. Qualitative Analysis completed and Quantitative Analysis begun.

The work in quantitative analysis will be, in the main, elementary and preparatory for advanced work.

Open to those who have completed Course 4.

6. Applied or Industrial Chemistry.

a. Twenty exercises. *b. Twenty exercises.*

Course 6 consists of lectures on chemical manufactures, such as iron, steel, sugar, sodium carbonate, fertilizers, sulphuric acid, glass, matches, paints, dyes, soaps, illuminating gas, petroleum, etc. The lectures will be illustrated by lantern views; and trips to the leading New England cities, to examine important chemical manufactures, will be taken as far as practicable.

Open only to those who have completed Courses 1, 2, 3, 4.

7. Advanced Quantitative Analysis.

Course 7 extends through the year, and is intended to fit the student for work in the laboratories of agricultural experiment stations, fertilizer works, iron-works, sugar refineries, etc.; and for the duties of the public analyst. This course will be made to fit the end which each has in view, and will be largely an individual one. For those students in the Chemical Division of the Agricultural Course the analyses made will tend in the main toward agricultural products, fertilizers, mucks, marls, manures, dairy products, waters, food-stuffs, sugars, etc. For the student wishing to enter metallurgical works, the analyses will be in the main upon iron, steel, and other metals, ores, limestone, slags, alloys, fuels, etc. As a preparation for the study of medicine, work will be done on poisons, foods, drugs, urine, etc. Other lines will be arranged to meet the wants of the individual student. Each student will be given some practice in all of the branches of agricultural, metallurgical, medical, sanitary, and industrial chemistry, in order to lay a foundation for any future work which may be required of him. A short course in gas analysis will also be provided. A portion of the time of the last two terms is given to work bearing upon the preparation of a graduating thesis.

Open to students who have completed Course 5.

8. Organic Chemistry. *Thirty exercises.*

Course 8, for students in the Chemical Division of the Agricultural Course, and in the Technical Chemistry Course, consists of laboratory practice by the students in preparing and purifying products relating to their respective lines of work.

Open to those who have completed Course 3.

9. Chemical Journals, Methods, etc. *Thirty-five exercises.*

The work consists of the study of current chemical literature, which is mainly in the German language, with recitations once

a week throughout the year. Each student will be expected to prepare abstracts, reports, criticisms, etc., upon assigned articles.

Open to students taking Course 7.

10. Chemical Philosophy. Lectures and Recitations.

a. Twenty exercises. *b. Twenty exercises.*

The work consists of advanced study of chemical theory. Practical experiments will be performed, with the aid of the student, in the determination of vapor density, molecular weights, specific heat, etc.; and the study of isomorphism, diffusion of gases, solutions, molecular and atomic volume, etc., will take up much of the time.

Course 10 comes in alternate years with Course 6, and is open to students who have completed Courses 1, 2, and 3.

DRAWING.

Two and one half hours' work is reckoned as one exercise.

1. Freehand and Instrumental Drawing.

a. Thirty exercises. *b. Twenty exercises.*

Course for women.

c. Seventy-five exercises. *d. Fifty exercises.*

Freehand drawing in outline and in light and shade, from geometric models, common objects, and casts of historic ornament. Machine sketching and the use of instruments.

2. Freehand and Instrumental Drawing.

a. Twenty exercises. *b. Thirty exercises.*

Light and shade drawing from the cast and from still life; pencil sketching; designing; details of building construction; projection drawing.

3. Descriptive Geometry and Drawing.

a. Thirty exercises. b. Twenty exercises. c. Thirty exercises.

Recitations and drawing exercises in the solution of problems in plane and solid geometry, by means of orthographic projections.

Course 3 is open only to those who have taken Mathematics 2.

4. Mechanical Drawing.

a. Twenty exercises.

Recitations on shades and shadows and perspective, with exercises in perspective drawing and line shading.

b. Thirty exercises.

Exercises in making dimension drawings for the use of workmen; tracing and blue-printing.

5. Freehand and Instrumental Drawing.

a. Forty-five exercises. b. Fifty exercises. c. Thirty exercises.

Study of architectural detail; design; use of color; pencil sketching; perspective; historic ornament.

6. Drawing and History of Painting.

a. Forty-five exercises. b. Thirty exercises. c. Thirty exercises.

This course includes the drawing of antique figures from casts, pencil sketching, charcoal drawing, use of water colors, charcoal drawing, and the study of the history of painting.

ENGINEERING.

1. Surveying. *Fifty exercises.*

Recitations, field work, and plotting, including compass, transit, plane-table, and level work.

2. Mechanism. *Forty-five exercises.*

Recitations, and exercises in drawing outlines of elementary combinations of parts of machines, with special reference to the relative motion of the parts, their forms and modes of connection.

Course 2 is open only to those who have taken Drawing 3.

3. Mechanics of Engineering.

a. Thirty exercises. b. Fifty exercises. c. Fifty exercises.

Courses 3 a and 3 b are devoted to recitations in Statics and Dynamics; Course 3 c to Mechanics of Materials.

Course 3 is open only to those who have taken Mathematics 1 to 5 inclusive.

4. Materials of Construction. *Sixty exercises.*

Recitations on the production, properties, uses, and preservation of engineering materials.

Course 4 is open only to those who have taken Course 3 c and Chemistry 2.

5. Thermodynamics.

a. Forty-five exercises. *b. Thirty exercises.*

Course 5 is open only to those who have taken Courses 3 a, 3 b, and Physics 1 and 2.

6. Heat Motors. *Thirty exercises.*

Course 6 is open only to those who have taken Course 5.

7. Construction and Theory of Dynamos and Electromotors. *Forty-five exercises.*

Lectures and quizzes.

Course 7 is open only to those who have taken Physics 1 to 4 and Mathematics 1 to 5.

8. Work in Mechanical Laboratory.

a and *b*. Tests of Materials.

a. Thirty exercises. *b. Thirty exercises.*

c. Tests of Boilers and Engines. *Twenty exercises.*

Courses 8 a and 8 b are open only to those who have taken Course 3 c. Course 8 c is open only to those who have taken Course 5.

9. Machine design. *Forty exercises.*

Course 9 is open only to those who have taken Courses 3 and 4.

10. Applications of Electricity.

a. Forty exercises. *b. Thirty exercises.*

Lectures and recitations.

Course 10 is open only to those who have taken Physics 1, 2, 3, and 4.

11. Roads, Streets, and Pavements. *Thirty exercises.*

Recitations and lectures on construction and maintenance of paved, macadamized, and gravel roads, with discussion of laws relating thereto.

ENGLISH.

1. Rhetoric.

a. Thirty exercises. b. Twenty exercises. c. Twenty exercises.

2. Three Themes. *One each term.*

Required of all students registered in the Sophomore Class.

3. Three Original Declamations. *One each term.*

Required of all students registered in the Junior Class.

4. Three Original Declamations. *One each term.*

Required of all students registered in the Senior Class.

5. Early English. *Forty-five exercises.*

Study of authors.

6. Elizabethan Writers. *Twenty exercises.*

Study of authors.

7. Writers of the Restoration and the French Influence. *Twenty exercises.*

8. Victorian Writers. *Forty-five exercises.*

9. English Romance. *Twenty exercises.*

10. American Literature. *Forty exercises.*

Lectures and study of authors.

11. Study of Words. *Twenty exercises.*

12. Advanced Rhetoric. *Twenty exercises.*

FRENCH.

1. Writers of the Nineteenth Century. *Forty-five exercises.*

Feuillet, Mérimée, About; sight translations.

2. The Modern Drama. *Thirty exercises.*

Scribe, Victor Hugo; Sandeau; the text will be made the basis of exercises in conversation.

3. French Prose of Popular Science. *Thirty exercises.*

The aim is to increase the student's vocabulary of practical, if not strictly scientific, subjects.

4. Systematic Vocabularies. *Forty-five exercises.*

Words will be studied in classes, and the common expressions of everyday life made familiar.

5. Idiomatic French. *Thirty exercises.*

French and English exercises on as large a number of idioms as time permits.

6. La Fontaine, Racine, Molière. *Thirty exercises.*

Translations in class supplemented by outside reading, on which the student will be examined.

GEOLOGY.

1. Elementary Geology. *Thirty exercises.*

2. Mineralogy. *Thirty exercises.*

A short course in blowpipe analysis, followed by laboratory practice in the determination and study of minerals, with special reference to their economic value.

Course 2 is open only to students who have taken Chemistry 1 and 2.

GERMAN.

1. German Grammar. *Forty-five exercises.*

Declension of nouns and adjectives; regular and irregular verbs; oral drill; written exercises.

2. Readings for Beginners. *Thirty exercises.*

Carefully graded selections of such a character as gradually to meet and master the difficulties of German syntax.

3. German Prose of the Nineteenth Century. *Thirty exercises.*

Variety of vocabulary, and the mastery of the more common idioms, will be the aim of this Course.

4. German Prose of the Nineteenth Century, Continued. *Forty-five exercises.*

More difficult selections; sight translations.

5. German Plays. *Thirty exercises.*

Conversational style adapted to oral drill in class.

6. Scientific German. *Thirty exercises.*

The purpose of the Course is to familiarize the student with the vocabulary of scientific investigation.

7. German Prose Composition.

The work of some German author will be translated with the view of using the text as the basis for exercises in German prose composition.

8. Systematic Vocabularies.

A drill on the words and expressions of most frequent recurrence.

9. Masterpieces of German Literature.

Schiller, Lessing.

HISTORY.

In the courses in history an important place is given to historical reading carried on in the reference room. In some cases a considerable part of the work is written. Special attention is paid to the development of arts and institutions.

1. Mediaeval and Modern History to the beginning of the Seventeenth Century. *Sixty exercises.*

2. Modern History from the beginning of the Seventeenth Century to the French Revolution. *Thirty exercises.*

3. European Political History since the beginning of the French Revolution. *Thirty exercises.*

4. American History to 1825. *Sixty exercises.*

5. American Political History since 1825. *Thirty exercises.*

HORTICULTURE.

1. Olericulture and Seed Growing. (Vegetable Gardening.) *Twenty exercises.*

Lectures and recitations. References: Green's Vegetable Gardening; Henderson's Gardening for Profit; Brill's Seed Growing; and various special pamphlets.

Open only to those taking or having completed Botany 3 and Zoölogy 3.

2. Pomology and Viticulture. (Fruit Growing.) *Forty-five exercises.*

References: Downing's Fruit and Fruit Trees of America; Thomas's American Fruit Culturist; Barry's Fruit Garden; Fuller's Small Fruit Culturist, etc.

Same requirements as for Horticulture 1.

3. Floriculture and Landscape Gardening. *Twenty exercises.*

Lectures and recitations. References: Henderson's Practical Floriculture; Long's Ornamental Gardening; Downing's Landscape Gardening; and various special works and special pamphlets.

Recommended that Drawing 2, Engineering 1, Botany 3, and Zoölogy 3 precede this course.

4. Arboriculture and Forestry. *Ten exercises.*

The use of trees for shelter, shade, and ornament; and their propagation. Value of trees for timber; how to improve existing woodlands; influence of forests upon soils, crops, and climate; establishment and management of plantations of forest trees, etc.

MATHEMATICS.

1. Algebra completed. *Fifty exercises.*

2. Solid Geometry, with advanced course. *Fifty exercises.*

3. Plane and Spherical Trigonometry. *Fifty exercises.*

4. Analytic Geometry. *Seventy-five exercises.*

5. (*a*) Differential Calculus, (*b*) Integral Calculus. *One hundred exercises.*

6. Astronomy. *Forty exercises.*

METEOROLOGY.

1. Meteorology. *Thirty exercises.*

Recitations and lectures on wind systems, precipitation, humidity, laws of storms and tornadoes, and methods of prediction of atmospheric changes.

MILITARY SCIENCE AND TACTICS.

1. Military Drill.

Practical instruction in drill and gymnastic exercises.
Four exercises per week throughout the course.

2. Military Tactics.

Theoretical instruction in drill regulations and the elementary principles of military science.
One exercise per week throughout the Freshman, Sophomore, and Junior years.

PHILOSOPHY.

1. Logic. *Thirty exercises.*

Lectures and recitations.

2. Psychology. *Forty-five exercises.*

Open only to students who have obtained a high average in Course 1.

3. Ethics. *Forty-five exercises.*

Lectures and recitations.
Open only to students who have obtained a high average in Courses 1 and 2.

4. Elements of Philosophy. *Thirty exercises.*

Open only to students who have obtained a high average in Courses 1, 2, and 3.

5. History of Philosophy. *Sixty exercises.*

Open only to students who have obtained a high average in Courses 1, 2, 3, and 4.

PHYSICS.

1. Mechanics. *Thirty exercises.*

2. (*a*) Heat, (*b*) Light. *Forty-five exercises.*

3. Sound. *Twenty exercises.*

4. Electricity and Magnetism. *Forty exercises.*

Courses 1, 2, 3, and 4 are a general introduction to the subject. The instruction is given by recitations and lectures, the latter

being illustrated by experiments and stereopticon. Notes on lectures and experiments are submitted by each student.

5. Laboratory Work in Mechanics and Heat.
Forty-five exercises.

6. Laboratory Work in Light and Sound. *Thirty exercises.*

7. Laboratory Work in Electricity and Magnetism.
Thirty exercises.

The work consists in the experimental verification of the laws of physics and the determination of physical constants; for example, the student will by experiments investigate the intensity of gravity, co-efficients of friction, the analytical balance, elasticity of wires, specific heats, laws of radiation and absorption of heat, candle power of lights, dip, declination, and intensity of the earth's magnetism, laws of electric currents, of electro-magnets, etc. A systematic and carefully written report on each experiment is required.

Courses 5, 6, and 7 are taken consecutively and are open only to those who have passed in Courses 1, 2, 3, and 4. Students in Engineering must also have passed in Mathematics 1 to 5 inclusive.

8. Theoretical Electricity.
a. Forty exercises. *b. Thirty exercises.*

This course includes the subjects of electrostatics, magnetism, and electro-dynamics as treated mathematically.

Course 8 is open only to those who have passed in Courses 1 to 7.

9. Electrical Measurements. *Thirty exercises.*

The work will include the study of the principles and methods employed in electrical measurements,—such as resistance of wires and batteries, E. M. F. of batteries, current measurement by ammeter and electrolysis, use of the voltmeter, etc.

See also Engineering.

POLITICAL SCIENCE.

1. Political Economy. *Fifty exercises.*

An elementary course, with lectures upon some of the practical questions of the day.

2. Laws of Business. *Thirty-three exercises.*

Recitations supplemented by lectures and the discussion of cases.

3. American Constitutional Law. *Forty-two exercises.*

Use is made of Pomeroy's Constitutional Law, which is supplemented by the decisions of the United States Supreme Court. Special attention is given to the connection between American constitutions and American political history.

4. Advanced Political Economy. *Thirty exercises.*

A consideration of such subjects as banking, bimetallism, and tariff legislation.

Open only to those who have taken Course 1.

5. Advanced Political Economy, or Social Science. *Thirty exercises.*

Open only to those who have taken Courses 1 and 4.

6. International Law. *Thirty exercises.*

SHOP WORK.

Three hours' work in the shops is reckoned as one exercise.

1. Work in Wood Shop.

Exercises in carpentry, joinery, and pattern making.

a. Forty-five exercises. b. Thirty exercises. c. Thirty exercises.

2. Work in Machine Shop.

Exercises in bench work, machine work, and shop measurements.

a. Forty-five exercises. *b. Thirty exercises.*
c. Thirty exercises. *d. Thirty exercises.*
e. Twenty exercises. *f. Twenty exercises.*

ZOOLOGY.

1. Introductory Zoölogy. *Forty-five exercises.*

A general introduction to the study of animal life, by means of lectures and laboratory dissections of the principal types.

2. Animal Biology. *Twenty exercises.*

A general study of the nature and processes of animal life, with especial attention to heredity, variation, development, and mental powers.

Open to students who have taken Course 1.

3. Entomology. *Thirty exercises.*

A review of the classification, structural characters, and biological relations of insects, with a special study of those injurious to cultivated crops and domestic animals, and of the means of preventing their injuries.

Open only to those who have taken Courses 1 and 2.

4. Economic Ornithology. *Fifteen exercises.*

Lectures on the relations of birds to agriculture, and their relations to each other and to other organisms.

Course 4 is open only to students who have taken Courses 1, 2, and 3.

5. Advanced Zoölogy.
Averaging four exercises a week for a year.

Course 5 is intended for those students who elect Zoölogy for their Senior year. It will usually be modified to suit individual needs. Open only to those who have completed all preceding courses, and shown special proficiency in Zoölogy.

6. Zoölogical Bibliography. *One hour a week for a year.*

Open only to students taking Course 5.

COURSES OF STUDY

AND SCHEDULE OF HOURS.

For details, see Description of Studies.

Chapel exercises: 11.50 daily, except that on Sundays the exercises are held at 5 P. M. Attendance is required of all students.

Military Drill: Military Science 1. M., T., Th., F., 12 to 12.30. Attendance is required of all students.

Rhetoricals: Wednesdays, 12 to 12.30. Attendance is required of all students.

FRESHMAN YEAR.

For all Four-Year Courses.

FIRST TERM.

		Exercises per week.
Rhetoric—English 1 a	Div. I. W. F. 9 Div. II. W. F. 8	2
Algebra and Geometry—Mathematics 1 and 2	Div. I. M. T. W. Th. F. S. 10 Div. II. M. T. W. Th. F. S. 11	6
*Shopwork—Shopwork 1 a. W. Th. F. 1.30 to 4 . . .		3
Freehand Drawing—Drawing 1 a. M. T. 1.30 to 4 . . .		2
French—French 1. T. Th. S. 8		3
Military Tactics—Military Science 2 .	Div. I. F. 11 Div. II. F. 10	

SECOND TERM.

Rhetoric—English 1 b	Div. I. W. F. 9 Div. II. W. F. 8	2
Trigonometry—Mathematics 3	Div. I. M. T. W. Th. F. S. 10 Div. II. M. T. W. Th. F. S. 11	6
*Shopwork—Shopwork 1 b. W. Th. F. 1.30 to 4 . . .		3
Freehand Drawing—Drawing 1 b. M. T. 1.30 to 4 . . .		2
French—French 2. T. Th. S. 8		3
Military Tactics—Military Science 2 .	Div. I. M. 11 Div. II. M. 10	

THIRD TERM.

Rhetoric—English 1 c	Div. I. W. F. 9 Div. II. W. F. 8	2
Surveying—Engineering 1. M. T. W. Th. F. 1.30 to 4 . .		5
Mechanics—Physics 1. M. W. F. 10		3
Botany—Botany 1, or † Shopwork—Shopwork 1 c. T. Th. S. 9 to 11.50		3
French—French 3. T. Th. S. 8		3
Military Tactics—Military Science 2 .	Div. I. W. 8 Div. II. W. 9	

* Women take additional Drawing and omit Shopwork.

† Shopwork is taken by students intending to complete either of the Engineering Courses, or the Course in Technical Chemistry; Botany is taken by all other students.

COURSE IN AGRICULTURE.

Sophomore Year.

FIRST TERM.

	Exercises per week.
Introductory Zoölogy—Zoölogy 1. M. W. F. 1.30 to 4	3
Soils and Fertilizers—Agriculture 1. T. Th. 8	2
Field Crops—Agriculture 2. S. 8	1
Inorganic Chemistry—Chemistry 1. M. W. F. 10	3
Heat and Light—Physics 2. { Div. I. T. Th. S. 10; Div. II. T. Th. S. 9 }	3
German—German 1. T. Th. S. 11	3
Practical Work—Agriculture 10. T. Th. 1.30 to 4. W. F. 8 to 10.	
Military Tactics—Military Science 2. Th. 9 or 10.	
One Theme—English 2.	

SECOND TERM.

Animal Biology—Zoölogy 2. W. F. 1.30 to 4	2
Stock Feeding—Agriculture 3. M. T. Th. 1.30	3
Comparative Anatomy—Agriculture 4. S. 8	1
Inorganic Chemistry—Chemistry 2. M. W. F. 10	3
Sound and Electricity—Physics 3 and 4 { Div. I. T. Th. S. 10; Div. II. T. Th. S. 9 }	3
Practical Work—Agriculture 10. M. T. Th. 2 to 4. W. F. 8 to 10.	
German—German 2. T. Th. S. 11	3
Military Tactics—Military Science 2. Th. 9 or 10.	
One Theme—English 2.	

THIRD TERM.

Entomology—Zoölogy 3. M. W. F. 9 to 11	3
Plant Diseases—Botany 2. T. Th. 1.30	2
Olericulture—Horticulture 1. M. T. W. 1.30	3
German—German 3. T. Th. S. 11	3
Organic Chemistry—Chemistry 3. W. F. 11	2
Electricity and Magnetism—Physics 4 { Div. I. T. Th. S. 10; Div. II. T. Th. S. 9 }	3
Practical Work—Agriculture 10. M. T. W. Th. F. 2 to 4.	
Military Tactics—Military Science 2. M. 11.	
One Theme—English 2.	

Junior Year.

FIRST TERM.

Pomology, with Practical Work—Horticulture 2. W. 9. Th. F. 1.30 to 4	3
Chemistry of Plant Growth—Agriculture 5. T. W. F. 8	3
Economic Ornithology—Zoölogy 4. S. 8	1
German—German 4. M. W. F. 11 or Am. Political History—History 4. T. Th. S. 10 to11.50	3
Chemical Laboratory—Chemistry 4. M. T. W. 1.30 to 4	3
Early English—English 5. M. W. F. 10	3
Military Tactics—Military Science 2. Th. 8.	
One original declamation. English 3.	

SECOND TERM.

Foods and Nutrition—Agriculture 6. W. F. 8	2
Logic—Philosophy 1. M. W. F. 10.	3
Geology—Geology 1. T. Th. S. 11	3
German—German 5. M. W. F. 11 or Am. Political History—History 5. T. Th. S. 9 to 11	3
Chemical Laboratory—Chemistry 4. M. T. W. 1.30 to 4	3
Elizabethan Writers—English 6. W. F. 9	2
Military Tactics—Military Science 2. S. 8.	
One original declamation—English 3.	

THIRD TERM.

Domestic Animals, with Practical Work—Agriculture 7. T. Th. S. 9 to 11	3
Political Economy—Political Science 1. T. W. Th. F. S. 8	5
English Literature—English 7. T. Th. 11	2
German—German 6. M. W. F. 11 or Modern History—History 3. T. Th. F. 1.30 to 4	3
Mineralogy—Geology 2. M. W. F. 9 to 11	3
Military Tactics—Military Science 2. S. 11.	
One original declamation—English 3.	

Senior Year.

FIRST TERM.

Agricultural Seminary—Agriculture 9 b. M. T. W. Th. 1.30	4
Thesis Work. F. 1.30	1
Laws of Business—Political Science 2 / Constitutional Law—Political Science 3 — T. W. Th. F. S. 9	5
English Literature—English 8. T. Th. S. 10	3

Psychology—Philosophy 2. T. Th. S. 11 3
Practical Work—Agriculture 10. M. T. W. Th. F. 2 to 4.
One original declamation—English 4.

SECOND TERM.

Agricultural Seminary—Agriculture 9 b. M. T. W. Th. 1.30 4
Dairying—Agriculture 8. M. W. F. 10 3
International Law—Political Science 6. M. W. F. 11 . . 3
or Astronomy—Mathematics 6. T. W. Th. F. 9 . . . 4
or, Elements of Philosophy—Philosophy 4. T. W. Th. F. S. 9 5
Ethics—Philosophy 3. T. Th. S. 10 3
Advanced Political Economy—Political Science 4. T. Th. S. 11 3
Practical Work and Thesis—Agriculture 10. M. T. W. Th. F. 2 to 4.
One original declamation—English 4.

THIRD TERM.

Agricultural Seminary—Agriculture 9 c. M. W. 1.30 . . 2
Thesis Work.—T. Th. 1.30 2
*Floriculture and Landscape Gardening—Horticulture 3. T. Th. 8 to 10 2
*Arboriculture and Forestry—Horticulture 4. F. 1.30 . . 1
*Roads—Engineering 11. M. W. F. 10 3
*American Literature—English 10. T. W. Th. F. 9 . . 4
*History of Philosophy—Philosophy 5. M. W. F. 11 S. 9 . 4
*Meteorology—Meteorology 1. T. Th. S. 10 3
*Advanced Political Economy—Political Science 5. T. Th. S. 11 3
Practical Work—Agriculture 10. M. T. W. Th. F. 2 to 4.
One original declamation—English 4.

* Elect 12 hours.

BIOLOGICAL DIVISION OF THE AGRICULTURAL COURSE.

Students wishing to make a special study of the biological sciences relating to Agriculture—such as botany, entomology, and economic zoölogy—will elect in their senior year, the advanced courses in botany or zoölogy.

CHEMICAL DIVISION OF THE AGRICULTURAL COURSE.

The work in this division is intended especially to fit for the profession of an agricultural chemist—for work in experiment stations, large dairy establishments, fertilizer works, etc. Stu-

dents wishing to take this course will elect, with the advice of the instructors in charge, seven hours per week of chemical work during the Junior year, and eight hours per week during the Senior year. Two years of German will be required in this course, and French is recommended to be taken by students intending to enter the division.

COURSES IN ENGINEERING.

Sophomore Year.

FIRST TERM.

	Exercises per week.
Analytic Geometry—Mathematics 4. T. W. Th. F. S. 8 . .	5
Descriptive Geometry—Drawing 3 a. M. W. 1.30 to 4 . .	2
Heat and Light—Physics 2 . . { Div. I. T. Th. S. 10 / Div. II. T. Th. S. 9 }	3
German—German 1. T. Th. S. 11	3
Shopwork—Shopwork 2 a. M. W. F. 9 to 11.45 . . .	3
Military Tactics—Military Science 2. Th. 9 or 10.	
One Theme—English 2.	

SECOND TERM.

Differential Calculus—Mathematics 5 a. T. W. Th. F. S. 8 .	5
Descriptive Geometry—Drawing 3 b. M. W. 1.30 to 4 . .	2
Sound and Electricity—Physics 3 and 4 { Div. I. T. Th. S. 10 / Div. II. T. Th. S. 9 }	3
German—German 2. T. Th. S. 11	3
Shopwork—Shopwork 2 b. M. W. F. 9 to 11.45 . . .	3
Military Tactics—Military Science 2. Th. 9 or 10.	
One Theme—English 2.	

THIRD TERM.

Integral Calculus—Mathematics 5 b. T. W. Th. F. S. 8 .	5
Electricity and Magnetism—Physics 4. { Div. I. T. Th. S. 10 / Div. II. T. Th. S. 9 }	3
German—German 3. T. Th. S. 11	3
Descriptive Geometry and Perspective Drawing—Drawing 3 c and 4 a. M. T. W. Th. F. 1.30 to 4	5
Military Tactics—Military Science 2. M. 11.	
One Theme—English 2.	

Junior Year.

FIRST TERM.

Mechanics of Engineering—Engineering 3 a. W. F. 9 . .	2
Mechanism—Engineering 2. T. Th. S. 8 to 11 . . .	3
Inorganic Chemistry—Chemistry 1. M. W. F. 10 . . .	3
Physical Laboratory—Physics 5. M. T. W. 1.30 to 4 . .	3
German—German 4. M. W. F. 11	3
Shopwork—Shopwork 2 d. Th. F. 1.30 to 4	2
Military Tactics—Military Science 2. W. 8.	
One original declamation—English 3.	

SECOND TERM.

Mechanics of Engineering—Engineering 3 b. T. W. Th. F. S. 9	5
Inorganic Chemistry—Chemistry 2. M. W. F. 10 . . .	3
Physical Laboratory—Physics 5. M. T. W. 1.30 to 4 . .	3
German—German 5. M. W. F. 11	3
Shopwork—Shopwork 2 e. Th. F. 1.30 to 4	2
Military Tactics—Military Science 2. S. 8.	
One original declamation—English 3.	

THIRD TERM.

Mechanics of Engineering—Engineering 3 c. T. W. Th. F. S. 8	5
Mineralogy—Geology 2. M. W. F. 9 to 11	3
Physical Laboratory—Physics 7. M. T. W. 1.30 to 4 . .	3
German—German 6. M. W. F. 11	3
Shopwork—Shopwork 2 f. Th. F. 1.30 to 4	2
Military Tactics—Military Science 2. S. 11.	
One original declamation—English 3.	

COURSE IN MECHANICAL ENGINEERING.

Senior Year.

FIRST TERM.

	Exercises per week.
Materials of Construction—Engineering 4. M. W. F. S. 11 .	4
Thermodynamics—Engineering 5 a. M. 10. T. Th. 11 .	3
Mechanical Drawing—Drawing 4 b. F. S. 8 to 11 . .	2
Mechanical Laboratory—Engineering 8 a. Th. F. 1.30 to 4	2
Dynamos and Electro-Motors—Engineering 7. T. W. Th. 8	3
Chemical Laboratory—Chemistry 4. M. W. 1.30 to 4 . .	2
One original declamation—English 4.	

SECOND TERM.

Machine Design—Engineering 9. M. T. W. Th. 11 . . .	4
Thermodynamics—Engineering 5 b. M. F. S. 10 . . .	3
Mechanical Laboratory—Engineering 8 b. W. Th. F. 1.30 to 4	3
Applications of Electricity—Engineering 10 a. T. W. Th. 8. F. 11	4
Chemical Laboratory—Chemistry 5. M. T. 1.30 to 4 . .	2
One original declamation—English 4.	

THIRD TERM.

Heat Motors—Engineering 6. W. Th. F. 9	3
Mechanical Laboratory—Engineering 8 c. M. T. 9 to 11.45	2
Thesis. M. T. W. 1.30 to 4	3
Applications of Electricity—Engineering 10 b. W. Th. F. 11	3
Political Economy—Political Science 1. T. W. Th. F. S. 8 .	5
One original declamation—English 4.	

COURSE IN ELECTRICAL ENGINEERING.

Senior Year.

FIRST TERM.

	Exercises per week.
Materials of Construction—Engineering 4. M. W. F. S. 11	4
Thermodynamics—Engineering 5 a. M. 10. T. Th. 11 .	3
Mechanical Drawing—Drawing 4 b. F. S. 8 to 11 . . .	2
Mechanical Laboratory—Engineering 8 a. Th. F. 1.30 to 4	2
Dynamos and Electro-Motors—Engineering 7. T. W. Th. 8	3
Chemical Laboratory—Chemistry 5. M. W. 1.30 to 4 . .	2
One original declamation—English 4.	

SECOND TERM.

Applications of Electricity—Engineering 10 a. T. W. Th. 8. F. 11	4
Thermodynamics—Engineering 5 b. M. F. S. 10 . . .	3
Mechanical Laboratory—Engineering 8 b. W. Th. F. 1.30 to 4	3
Theoretical Electricity—Physics 8 a. M. T. W. Th. 11 . .	4
Chemical Laboratory—Chemistry 6. M. T. 1.30 to 4 . .	2
One original declamation—English 4.	

THIRD TERM.

Heat Motors—Engineering 6. W. Th. F. 9	3
Applications of Electricity—Engineering 10 b. W. Th. F. 11	3
Theoretical Electricity—Physics 8 b. W. F. 10 . . .	2
Thesis. W. 1.30 to 4. Th. F. 1.30 to 3	3
Political Economy—Political Science 1. T. W. Th. F. S. 8 .	5
One original declamation—English 4.	

COURSE IN TECHNICAL CHEMISTRY.

Sophomore Year.

FIRST TERM.

		Exercises per week.
Analytic Geometry—Mathematics 4.	T. W. Th. F. S. 8	5
Descriptive Geometry—Drawing 3 a.	M. W. 1.30 to 4	2
German—German 1.	T. Th. S. 11	3
Inorganic Chemistry—Chemistry 1.	M. W. F. 10	3
Heat and Light—Physics 2	Div. I. T. Th. S. 10; Div. II. T. Th. S. 9	3
Military Tactics—Military Science 2.	Th. 9 or 10.	
One Theme—English 2.		

SECOND TERM.

Differential Calculus—Mathematics 5 a.	T. W. Th. F. S. 8	5
Descriptive Geometry—Drawing 3 b.	M. W. 1.30 to 4	2
German—German 2.	T. Th. S. 11	3
Inorganic Chemistry—Chemistry 2.	M. W. F. 10	3
Sound and Electricity—Physics 3 and 4	Div. I. T. Th. S. 10; Div. II. T. Th. S 9	3
Military Tactics—Military Science 2.	Th. 9 or 10.	
One Theme—English 2.		

THIRD TERM.

Integral Calculus—Mathematics 5 b.	T. W. Th. F. S. 8	5
Mineralogy—Geology 2.	M. W. F. 9 to 11	3
German—German 3.	T. Th. S. 11	3
Organic Chemistry—Chemistry 3.	W. F. 11	2
Electricity and Magnetism—Physics 4	Div. I. T. Th. S. 10; Div. II. T. Th. S. 9	3
Military Tactics—Military Science 2.	M. 11.	
One Theme—English 2.		

Junior Year.

FIRST TERM.

Chemistry of Plant Growth—Agriculture 1.	T. W. F. 8	3
Shopwork—Shopwork 2 a.	W. Th. 9 to 11	2
German—German 4.	M. W. F. 11	3
Chemical Laboratory—Chemistry 4 and 5.	Th. F. 1.30 to 4. M. F. 9 to 11. S. 9 to 11.45. M. T. W. 1.30 to 4	8
Military Tactics—Military Science 2.	Th. 8.	
One original declamation—English 3.		

SECOND TERM.

Chemical Laboratory—Chemistry 7. M. T. W. Th. F. 1.30 to 4. M. 9 to 11 6
Applied Chemistry.—Chemistry 6 a. T. W. 10 . . . 2
Mechanics of Engineering—Engineering 3 a. T. W. Th. F. S. 9 5
German—German 5. M. W. F. 11 3
Military Tactics—Military Science 2. S. 8.
One original declamation—English 3.

THIRD TERM.

Chemical Laboratory—Chemistry 7. M. T. W. Th. F. 1.30 to 4. S. 9 to 11 6
Applied Chemistry—Chemistry 6 b. M. W. 8. . . . 2
Mechanics of Engineering—Engineering 3 c. T. W. Th. F. S. 8 5
German—German 3. M. W. F. 11 3
Military Tactics—Military Science 2. S. 11.
One original declamation—English 3.

Senior Year.

FIRST TERM.

Chemical Laboratory—Chemistry 7. M. W. F. 1.30 to 4. T. Th. 9 to 11. W. 9 to 11.50. F. 8 to 11.50 7
Organic Chemistry—Chemistry 8. T. Th. 1.30 to 4 . . 2
Chemical Journals—Chemistry 9. S. 11 1
Thermodynamics—Engineering 5 a. M. 10. T. Th. 11 . 3
Dynamos and Electro-Motors—Engineering 7. T. W. Th. 8 3
One original declamation—English 4.

SECOND TERM.

Chemical Laboratory—Chemistry 7 and Thesis. Th. F. 1.30 to 4. T. Th. F. S. 8 to 10. W. 8 to 11.50 7
Thermodynamics—Engineering 5 b. M. F. S. 10 . . . 3
Chemical Journals—Chemistry 9. S. 11 1
Chemical Philosophy—Chemistry 10 a. T. Th. 10 . . . 2
Electrical Measurements—Physics 9. M. T. W. 1.30 to 4 . 3
One original declamation—English 4.

THIRD TERM.

Chemical Laboratory—Chemistry 7 and Thesis. M. T. W. Th. F. 1.30 to 4 5
Chemical Journals—Chemistry 9. S. 11 1

Chemical Philosophy—Chemistry 10 b. T. Th. 11	2
Political Economy—Political Science 1. T. W. Th. F. S. 8 .	5
Meteorology—Meteorology 1. T. Th. S. 10	3
One original declamation—English 4.	

GENERAL COURSE.

This course gives to students an opportunity to take parts of the courses in Agriculture and the Mechanic Arts: to pursue the study of English, French, German, and History each for two or more years: to devote to Philosophy one year and to Mathematics and the Sciences the time usually allowed in colleges. With its arrangement of elective studies it is fitted to serve at the same time as a course for women and as a preparation for professional study or business life.

Sophomore Year.

FIRST TERM.

	Exercises per week.
Introductory Zoölogy—Zoölogy 1. M. W. F. 1.30 to 4 . .	3
German—German 1. T. Th. S. 11	3
Inorganic Chemistry—Chemistry 1. M. W. F. 10 . . .	3
Heat and Light—Physics 2. . . { Div. I. T. Th. S. 10; Div. II. T. Th. S. 9 }	3
Medieval and Modern History—History 1. W. F. 11. T. Th. 1.30 to 4. or, Analytic Geometry—Mathematics 4. T W. Th. F. S. 8	4 or 5
Military Tactics—Military Science 2. Th. 9 or 10 . . .	1
One Theme—English 2.	

SECOND TERM.

German—German 2. T. Th. S. 11	3
Inorganic Chemistry—Chemistry 2. M. W. F. 10 . . .	3
Sound and Electricity—Physics 3 and 4. { Div. I. T. Th. S. 10; Div. II. T. Th. S. 9 }	3
*Modern History—History 2. M. T. Th. 1.30 to 4 . . .	3
*Animal Biology—Zoölogy 2. W. F. 1.30 to 4	2
*Advanced Freehand Drawing—Drawing 2 a. W. F. 8 to 10	2
*Study of Words—English 11. W. F. 11	2
*Differential Calculus—Mathematics 5 a. T. W. Th. F. S. 8	5
Military Tactics—Military Science 2. Th. 9 or 10 . . .	1
One Theme—English 2.	

* Elect 7 hours.

THIRD TERM.

German—German 3. T. Th. S. 11	3
Electricity and Magnetism—Physics 4. { Div. I. T. Th. S. 10 / Div. II. T. Th. S. 9 }	3
*European History since 1789—History 3. T. Th. F. 1.30 to4	3
*Entomology— Zoölogy 3. M. W. F. 9 to 11	3
*Organic Chemistry—Chemistry 3. W. F. 11	2
*Advanced Freehand Drawing—Drawing 2 b. M. W. F. 9 to 11	3
*Advanced Rhetoric—English 12. Th. F. 1.30 to 4 . . .	2
*Integral Calculus—Mathematics 5 b. T. W. Th. F. S. 8 .	5
Military Tactics—Military Science 2. M. 11	1
One Theme—English 2.	

* Elect 10 hours.

Junior Year.

FIRST TERM.

German—German 4. M. W. F. 11	3
American Political History—History 4. T. Th. S. 10 to 11.50. F. 1.30 to 4	4
Early English—English 5. M. W. F. 10	3
Military Tactics—Military Science 2. W. 8 or Th. 8 . .	1
One original declamation—English 3.	
*Chemistry of Plant Growth—Agriculture 1. T. W. F. 8 .	3
*Economic Ornithology—Zoölogy 4. S. 8	1
*Chemical Laboratory—Chemistry 5. M. T. W. 1.30 to 4 .	3
*Physical Laboratory—Physics 4. M. T. W. 1.30 to 4 . .	3
*Drawing—Drawing 5 a. T. Th. 8 to 10. Th. 1.30 to 4 . .	3

* Elect 6 hours.

SECOND TERM.

German—German 5. M. W. F. 11	3
American Political History—History 5. T. Th. S. 9 to 11 .	3
Elizabethan Writers—English 6. W. F. 9	2
Military Tactics—Military Science 2. S. 8	1
Logic—Philosophy 1. M. W. F. 10	3
One original declamation—English 3.	
*Geology—Geology 1. T. Th. S. 11	3
*Food and Nutrition—Agriculture 3. W. F. 8 . . .	2
*Chemical Laboratory—Chemistry 6. M. T. W. 1.30 to 4 .	3
*Physical Laboratory—Physics 5. M. T. W. 1.30 to 4 . .	3
*Drawing—Drawing 5 b. T. Th. S. 8. Th. F. 1.30 to 4 .	2 to 5

* Elect 5 hours.

THIRD TERM.

German—German 3. M. W. F. 11	3
Mineralogy—Geology 2. M. W. F. 9 to 11	3
Writers of Restoration—English 7. T. Th. 11	2
Political Economy—Political Science 1. T. W. Th. F. S. 8	5
Military Tactics—Military Science 2. S. 11	1
One original declamation—English 3.	
*Drawing—Drawing 5 c. T. Th. S. 9 to 11	3
*Chemical Laboratory—Chemistry 6. M. T. W. 1.30 to 4 .	3
*Physical Laboratory—Physics 6. M. T. W. 1.30 to 4 . .	3

* Elect 3 hours.

Senior Year.

FIRST TERM.

English 4 required; sixteen exercises elective.

Constitutional Law—Political Science 3 } T. W. Th. F. S. 9	5
Laws of Business—Political Science 2 }	
German—German 7 } M. W. F. 10	3
or French—French 4 }	
Victorian Writers—English 8. T. Th. S. 10	3
Psychology—Philosophy 2. T. Th. S. 11	3
Thesis Work	2
One original declamation—English 4.	
Chemical Laboratory—Chemistry 8. M. T. W. 1.30 to 4 . .	3
Advanced Zoölogy—Zoölogy 5. M. T. W. Th. 1.30 to 4 .	4
Advanced Botany—Botany 3. M. T. W. 1.30 to 4 . . .	3
Advanced Drawing and Art Study—Drawing 6 a. W. Th. F. 1.30 to 4	3

SECOND TERM.

English 4 required; sixteen exercises elective.

One original declamation—English 4.	
German—German 8 } M. W. F. 10	3
or French—French 5 }	
Astronomy—Mathematics 6. T. W. Th. F. 9	4
International Law—Political Science 6. M. W. F. 11 . .	3
Thesis Work	1 or 2
English Romance—English 9. Th. F 3	2
Elements of Philosophy—Philosophy 4. T. W. Th. F. S. 9 .	5
Ethics—Philosophy 3. T. Th. S. 10	3
Advanced Political Economy—Political Science 4. T. Th. S. 11	3
Chemical Laboratory—Chemistry 8. M. T. W. 1.30 to 4 .	3
Advanced Zoölogy—Zoölogy 5. M. T. W. 1.30 to 4 . . .	3

Advanced Botany—Botany 3. M. T. W. 1.30 to 4 3
Advanced Drawing and Painting—Drawing 6 b. M. T. W. 1.30 to 4 3

THIRD TERM.

English 4 required; fourteen exercises elective.

One original declamation—English 4.
American Literature—English 10. T. W. Th. F. 9 4
German—German 9 or French—French 6 { M. W. F. 10 3
Meteorology—Meteorology 1. T. Th. S. 10 3
Roads—Engineering 11. M. W. F. 10 3
History of Philosophy—Philosophy 5. M. W. F. 11. S. 9 . 4
Advanced Political Economy—Political Science 5. T. Th. S. 11 3
Chemical Laboratory—Chemistry 8. M. W. F. P. M. . . 3
Advanced Zoölogy—Zoölogy 5. M. W. F. P. M. . . . 3
Advanced Botany—Botany 3. M. W. F. P. M. 3
Advanced Drawing and Painting—Drawing 6 c. M. W. F. P. M. 3

THE PREPARATORY YEAR.

The preparatory year, first offered in 1897, is intended to meet a demand which has been made in certain sections of the state where students have with difficulty secured adequate preparation for admission to the Freshman class. It also makes the four years' course of additional value by increasing the requirements for admission to that class.

COURSE OF STUDY AND SCHEDULE OF HOURS.

FIRST TERM.

Exercises per week.

Higher Algebra. M. W. F. 3 3
Plane Geometry. T. Th. 3. W. F. 9 4
Rhetoric, with Study of Authors. M. W. F. 11 . . . 3

For description of work, see Requirements for Admission, page 16.

French Grammar. T. Th. S. 9 3

A drill in the essentials for accurate translation.

Grecian History. T. Th. S. 11 3

SECOND TERM.

Higher Algebra. M. W. F. 3 3
Plane Geometry. T. W. Th. F. 8 4
Rhetoric, with Study of Authors. T. Th. S. 11 . . . 3
French Reader. T. Th. S. 9 3

Easy selections; irregular verbs.

Roman History. M. W. F. 11 3

THIRD TERM.

Study of Authors. W. F. 8 2
Readings from French History. T. Th. S. 9 3

Study of variety of style and peculiarities of syntax.

Elementary Physics. M. T. W. Th. F. S. 11 6
Introductory Botany. M. T. W. Th. F. 1.30 to 4 5

A general introduction to the study of plants by means of laboratory work and lectures, beginning with the lowest forms.

THE TWO YEARS' COURSE IN AGRICULTURE.

The Two Years' Course in Practical and Theoretical Agriculture provided for by the Legislature of 1895 was established for and is open to "students who can pass a fair and reasonable examination in reading, spelling, writing, arithmetic, English grammar, and the geography and history of the United States." This course is especially devoted to the study of practical and theoretical agriculture in its various branches, and the natural sciences, which are so closely related to successful farming. At least ten hours each week are spent in practical exercises, which, so far as possible, are educational in their nature. This work is done on the farm, or in the garden, barn, greenhouse, or shop.

The course offers unusual opportunities to young men to obtain in a short time and at small expense a knowledge of the fundamental principles of agriculture.

COURSE OF STUDY AND SCHEDULE OF HOURS.

First Year.

FIRST TERM.

Exercises per week.

First principles of Agriculture, with Practical Work. T. Th. S. 10 to 12 3

The course deals with the fundamentals of general agriculture, and forms a foundation for the courses that follow it. Text-book work, together with lectures.

Elementary Algebra. T. Th. S. 9 3
English Grammar and Composition. W. F. 9 2
Freehand Drawing. M. T. 1.30 to 4 2

The course includes freehand drawing from models and from groups of common objects, the principles of perspective, machine sketching and the use of instruments.

Principles of Plant Growth. M. W. F. 11 3

This course is elementary and points out the fundamentals of horticulture. Fifteen afternoons, one each week as laboratory work, are to go with this course.

Practical Work. W. Th. F. 1.30 to 4.

SECOND TERM.

Dairying, with Practice. M. T. W. 1.30 to 4. Th. S. 11 . 5

This course consists of practical and theoretical instruction in methods of dairying, including the general management of the dairy, the methods of milk analysis, the bacteriology of the dairy, the use of separators, the making of butter, and the preparation of milk for the city market.

Domestic Animals. (Breeds and Breeding.) T. F. 11 . . 2

Lectures and recitations. References: Curtis's "Horses, Cattle, Sheep, and Swine," etc. Elementary course on Stock Breeding.

Bookkeeping. M. W. 11 2

This course familiarizes students with business methods in keeping accounts in single and double entry.

Elementary Algebra. T. Th. S. 9 3
English Grammar and Composition. W. F. 9 . . . 2
Practical Work. Th. F. 1.30 to 4.

THIRD TERM.

Botany. M. T. W. Th. F. 1.30 to 4 5

A general introduction to the study of plants by means of laboratory work and lectures, beginning with the lower forms.

Elementary Horticulture and Practical Work. M. 9 to 12. W. F. S. 10 to 12 4

The object of the course is to familiarize the student with proper methods of propagating, growing, and marketing all kinds of fruits grown in the state.

References: "The Nursery Book"; "The Horticultural Rule Book."

Physical Geography, with Practical Work. T. Th. 10 to 12 2
Elementary Algebra. T. Th. S. 9 3
English Grammar and Composition. W. F. 9 2

Second Year.

FIRST TERM.

Field Crops, with Practical Work. S. 8 to 12 1

The different groups of field crops (grasses, cereals, clovers, etc.) are each taken up and studied collectively and individually. The proper soils, preparation of seed bed, fertilizers, drainage, harvesting, profits, etc.

Soils and Fertilizers. T. Th. 8 2

The course deals with the relations of soils and fertilizers to each other and to plants.

Inorganic Chemistry. M. W. 9 2

Lectures and recitations on general theoretical chemistry, with special reference to its bearing on agricultural products, fertilizers, dairy products, etc.

Introductory Zoölogy. M. W. F. 1.30 to 4 3

A general introduction to the study of animal life, by means of lectures and laboratory dissections of the principal types.

English Composition, with Study of Authors. M. W. F. 11 3
Plane Geometry. T. Th. 3. W. F. 9 4
Practical Work. T. Th. 9 to 12.

SECOND TERM.

Stock Feeding, with Practical Work. M. T. Th. 1.30 to 4 3

The course deals with the practical feeding of farm animals, including the composition of foods and the compounding of rations. It consists of recitations and exercises in the stable.

Animal Biology. W. F. 1.30 to 4 2

A general study of the nature and processes of animal life, with especial attention to heredity, variation, development, and mental powers.

Comparative Anatomy of Domestic Animals. S. 8 . . 1

This course familiarizes students with the general external and internal organs of animals, their uses, etc. Lectures and recitations.

Inorganic Chemistry. W. F. 9 2
Plane Geometry. T. W. Th. F. 8 4
Study of English Authors. T. Th. S. 11 3
Practical Work. M. W. F. 10 to 11.45.

THIRD TERM.

Entomology. M. W. F. 9 to 11 3

A review of the classification, structural characters, and biological relations of insects, with a special study of those injurious to cultivated crops and domestic animals, and of the means of preventing their injuries.

Open only to those who have taken courses in Zoölogy and Animal Biology.

Field and Road Measurements. M. W. F. 1.30 to 4 . . 3

A short course in practical surveying without angle measurements, including land areas, drainage, road leveling, etc.

Elementary Physics. M. T. W. Th. F. S. 11 6
Vegetable Gardening. T. Th. S. 9 to 11 3

Varieties adapted to both the home and the market garden. Importance of the trucking industry, both out of doors and under glass. Important trucking sections, methods of culture, marketing, etc. Lectures and recitations.

Rhetoric. Study of English Authors. W. F. 8 . . . 2
Practical Work. T. Th. 1.30 to 4.

TEN WEEKS' WINTER COURSE IN AGRICULTURE

The college offers a Winter Course in agriculture, beginning Thursday, January 13, and continuing until Wednesday, March 23, 1898.

No entrance examination is required, but students taking the course should possess a common school education.

The studies offered are dairying, stock-feeding, winter gardening, wood-working, forestry, and entomology, with practice in the creamery, barn, greenhouse, or wood-shop.

A fee of five dollars will be charged as tuition.

The expense of the course may be estimated as follows:

Room and board, ten weeks, at $4 . .	$40.00
Tuition fee	5.00
Books	5.00
Total	$50.00

Applicants should report at the president's office, Thompson Hall, Durham, on Wednesday, January 12, 1898.

FOUR WEEKS' COURSE IN DAIRYING.

This course is offered in connection with the Winter Course in Agriculture, to young men who wish to make a specialty of dairying.

Students may begin this course at any time between January 13 and February 17, 1898, and devote all their time for four weeks to the following subjects: Butter making, milk testing, pasteurizing milk and cream, dairy bacteriology, and dairy husbandry.

The creamery is equipped with separator, milk tester, pasteurizer, and all tools required in making butter and preparing milk and cream for market.

Requirements for admission are the same as for the Winter Course in Agriculture.

ESTIMATE OF EXPENSES.

Room rent, four weeks at $1 . . .	$4.00
Board, four weeks at $3	12.00
Fee	5.00
Books	3.00
Total	$24.00

For circulars or further information concerning the course, address President Charles S. Murkland, or Prof. C. M. Weed, Secretary, Durham, N. H.

NON-RESIDENT COURSE IN AGRICULTURE.

The Non-resident Course in Agriculture conducted by the New Hampshire College of Agriculture and the Mechanic Arts was established in January, 1894, and has been in successful operation ever since. The course is primarily designed to meet the needs of those farmers' sons who are unable to leave home to attend college, but who feel the need of the fuller knowledge of their work which the college offers. It has enrolled a considerable number of such students, and also has attracted many young men in cities who intend to become farmers.

The course is conducted as a correspondence course, books and bulletins being sent the student, who studies them and returns answers to examination questions. The bulletins are furnished free, and the books at a discount from publishers' prices, averaging about 25 per cent.

In the following pages will be found a statement of the methods of this course, list of the books used, blank forms of application, and such other information as the prospective student is likely to desire.

METHODS.

The methods of the course are briefly as follows:

1. It is free to all, with no entrance examination or fee. The student may begin at any time; and the privileges of the course are not limited to residents of New Hampshire.

2. Students are offered the option of working for a certificate or not, as they see fit, but they are strongly urged to do the former. Those so working will, as the studies are finished, send in answers to sets of examination questions; those not so working will submit a statement that the requisite reading has been carefully done.

3. Each of the books and pamphlets is estimated at a certain number of exercises, an exercise averaging ten pages of reading matter.

4. The satisfactory completion of six hundred exercises entitles the student to a certificate. It is probable that under ordinary conditions this will require about two years.

5. Each student working for a certificate is required to take certain general studies, such as Soils, Tillage, Noxious Insects, Fungous Diseases, Meteorology, Laws of Plant Growth, Farm and Household Chemistry, Fertilizers, etc., and to select at least three lines of study from the following similar subjects:

Dairying and Stock Feeding.	Vegetables.
Poultry Keeping.	Floriculture.
Orchard Fruits.	Plant Propagation.
Small Fruits.	Forestry.

Commercial Horticulture and Market Gardening.

Students not working for a certificate may select any of the above subjects they desire, but it is recommended that they pursue the prescribed lines of general reading in connection with special subjects.

6. The cost of books is not great, ranging from $15 to $20 for the full certificate course. As far as possible the college will furnish bulletins free. In case two or three students live near each other, they can use the same set of books and thus reduce the cost. The student will remit by postal money order or registered letter a small amount ($5 is sufficient) to cover the cost of the first instalment of books, which will be ordered to be sent immediately. When he has finished these books, he will send a similar remittance for the next instalment; and so on through the course. The student may suit his own convenience as to the amount of each instalment.

A circular giving full information concerning this non-resident course will be sent to any address upon application to President C. S. Murkland, or Professor C. M. Weed, Durham, N. H.

HOME CLASSES IN AGRICULTURE.

During recent years a movement of great significance has been agitating the educational centers of the English-speaking world. It is known as university extension, or, better, as educational extension. It has resulted from the recognition of the fact that comparatively few people can go to college or university; and consists essentially in taking the college to those who cannot go to the college; in offering to every one everywhere the opportunity of a college education. It seeks to solve the problem of the education of the masses, by widening the scope of existing education. Its history shows that it is in peculiar harmony with the sentiments and systems of the American people, and it has well been called "the most significant educational movement of the nineteenth century."

While the older colleges and universities have done much in the way of university extension along the lines of higher education, little, if any, definite organized effort has been made to adapt the movement to agricultural education. Much tending in the same direction in the way of lectures and reading courses has been done in many states, as well as in New Hampshire, where the College of Agriculture and the Mechanic Arts has had in successful operation for some time past a system of lectures available by any agricultural organization, and a non-resident course in agriculture open to any one elsewhere. While there is no intention of abandoning either of these lines of work, the college believes the time is ripe for so combining them in certain localities as to carry out more fully the educational extension idea. It therefore makes this proposition:

If ten or more persons in any grange or other agricultural organization will read the books and pamphlets on the list of

any of the subjects named, the college will furnish one or more lectures upon that subject, provided the ordinary expenses of the lecturer are paid by the organization. The college will also furnish the books at a reduced price, with very few exceptions giving a reduction of 25 per cent on the usual price.

It is believed that this proposition is an entirely practicable one, which, if successfully carried out, should be productive of great good. The difficulty with isolated lectures in public meetings and institutes is that the hearers come with no special preparation in that line of thought, often merely to be amused, and the effect produced is usually not a permanent one. On the other hand, the difficulty with long reading courses is that it seems too large an enterprise for the great majority of people to take up. The present proposition is a medium between these two extremes; it offers to the people of each locality the opportunity for a short course of study of one or more subjects in which they are especially interested, with the use of a few books of small cost, and the privilege of instruction from a specialist, to whom they may apply for any special information they desire.

A circular giving full information concerning subjects and books available for such home classes will be sent to any address on application to President Charles S. Murkland, Durham, N. H.

GENERAL INFORMATION.

ATTENDANCE.

All regular students are required to attend chapel, rhetoricals, and military drill, and to register for at least sixteen exercises per week.

PRIZES.

I. The Smyth Prizes.—Hon. Frederick Smyth, of Manchester, N. H., offers to the members of the Senior and Junior classes two prizes, one of twenty dollars and the other of ten, for the best essays on subjects connected with agriculture or the mechanic arts; also three prizes, one of twenty, one of fifteen, and one of ten dollars, for excellence in oratory, open to the upper classes; also two prizes for reading, one of fifteen and one of ten dollars, open to the lower classes.

II. Bailey Prize.—Dr. C. H. Bailey, of Gardner, Mass., and E. A. Bailey, B. S., of Keene, N. H., offer a prize of ten dollars for proficiency in chemistry.

III. Erskine Mason Memorial Prize.—Mrs. Erskine Mason, of Stamford, Conn., has invested one hundred dollars as a memorial of her son, a member of the class of '93, the income of which is to be given, for the present, to that member of the Senior class who has made the greatest improvement during his course.

IV. Entrance Examination Prize of $500. See Valentine Smith Scholarships, page 64.

DEGREES.

The degree of Bachelor of Science will be conferred upon those who complete a four years' course, or its equivalent, and pass the final examinations. Each candidate for a degree must

prepare a thesis on some subject relating to the course of study taken.

The college offers opportunities for post-graduate study in agricultural, scientific, and engineering lines. After the satisfactory completion of an appropriate amount of work, advanced degrees will be given.

SPECIAL STUDENTS.

Any person of mature years may be admitted as a special student, upon presenting satisfactory proof of ability to complete the desired course of study. Undergraduate students who are not in full standing in their respective classes, are registered as *partial course students*, and are subject to all regulations applicable to students in good standing.

WOMEN.

Women attending the college may elect any course laid down in the curriculum, subject to the conditions prescribed for all students. They may omit manual labor on the farm and in the shop, and substitute other studies.

The General Course, with its electives, is specially prepared for women, and is so planned that special courses may be arranged in literature, languages, history, philosophy, drawing, and manual training.

The courses in agriculture and chemistry afford opportunities for the study of the natural sciences, and the engineering courses offer exceptional advantages in mathematics and physics.

BUILDINGS.

THOMPSON HALL.

Thompson Hall, the main college building, has a length of 128 feet, exclusive of the porte cochère, which is 40 feet long, and a width of 93 feet in the widest part. It is built of granite and brick, and has three stories besides the basement.

One half of the first floor and basement is devoted to the library, which is provided with a large, well-lighted reading room for papers and magazines, a reference room for special work, a librarian's room, a delivery room, and shelf space for fifty thousand volumes.

The remainder of the first floor is used for offices, recitation rooms, and a waiting room for women.

On the second floor are more offices and recitation rooms, and the botanical and zoölogical laboratories and the museum.

On the third floor is the large hall used as an auditorium, two literary society rooms, and the bell-boy's room.

The building is lighted by gas and electricity, and provided with the most approved system of heating and ventilation.

CONANT HALL.

[Chemical and Physical Laboratories.]

Conant Hall contains the laboratories and lecture rooms for instruction in chemistry, physics, and electrical engineering. It is a substantial brick building, 92 by 70 feet, and three stories high, including the basement. It is heated by steam brought from the shops, lighted by gas and electricity, and provided with a system of thorough ventilation. Water, gas, high pressure steam, hydrogen, oxygen, vacuum, and blast are supplied through pipes whenever needed, and the lecture rooms in addition have switches controlling both dynamo and battery currents, and arrangements for stereopticon illustration.

The basement contains a small workshop, the battery, photometer, photographic and comparator rooms, a clock room protected by double walls against changes in temperature, an acid room, and a water and gas laboratory, provided with the necessary fixtures and appliances.

The first floor, with the exception of one room, is occupied by the physics department. It contains the mineralogical laboratory, which is provided with tile-covered desks and other facilities for blowpipe analysis; the junior physical laboratory; an apparatus room; a reading room and reference room

for physical and electrical books and periodicals; an electrical laboratory, from the neighborhood of which masses of iron have been excluded, so that magnetic measurements can be made with a good degree of accuracy; and the physical lecture room, which is provided with all necessary conveniences, as before mentioned. For optical experiments, the room can be darkened by means of special window-shutters, operated from one of the lecture desks. A stone pier between the two desks makes it possible to use delicate instruments.

The second floor is given up entirely to the chemical department. It contains storerooms, an organic laboratory, a qualitative laboratory, a private laboratory, a dark room for polariscopic and spectroscopic work, a lecture room provided with facilities as before described, a quantitative laboratory, and a room to contain the delicate chemical balances and most important reference works.

The laboratories are fitted up with the most modern accessories, and with special reference to the kind of work to be performed in each.

THE SHOP BUILDINGS.

The shops have been planned and built with the object of providing facilities for instruction in the working of wood and metals, and in the design, construction, care, and management of machinery. Incorporated with the shops is a central station for furnishing heat, light, water, and power, wherever needed in any of the college buildings; and the machinery of this station forms a part of the material equipment of the engineering departments.

The main shop building is 42 by 106 feet, and two stories high, with a basement 31 by 42 feet. In a separate one-story building, 40 by 100 feet, on a level with the basement of the main building, are the boiler house, forge shop, coal shed, and foundry.

In the boiler room, three boilers, aggregating one hundred and sixty horse-power, furnish steam to all the college buildings, wherever needed for heating or power. A brick chimney

95 feet high carries away the waste gases from the furnaces. The coal room provides for the storage of two hundred tons of coal conveniently near the boilers.

The basement of the main shop building is used as an engine-room, containing a forty horse-power engine, furnishing power for the shops and for the electric lighting; a dynamo for lighting the college buildings and campus; and the large steam pump, which receives water by gravity from the reservoir one half mile distant, and forces it through underground mains to the various hydrants and buildings. The engine-room serves as a power laboratory, and the machines mentioned, with others, will give to students opportunity for making efficiency tests.

On the first floor of the main shop building, a lavatory is provided. The largest room on this floor is the machine-shop, where there is opportunity for practice in the operations of working metals by cutting tools, both by hand work and by machinery.

The second floor of this building is mainly occupied by a wood shop, in which the common branches of carpentry, joinery, and pattern making are taught. Practice is given in the use of carpenter's tools, and in the care and operation of the machines of most general use in wood-working.

The shop buildings are constructed on the "slow-burning" principle, with thick walls, and heavy, continuous plank floors. The rooms are all well lighted and well ventilated.

APPARATUS.

The various chemical laboratories are supplied with a full line of such apparatus as is required in each. Besides all necessary glass and porcelain ware, this includes water baths; drying ovens, combustion, muffle, and assay furnaces; platinum dishes and crucibles; polariscope; spectroscope; balances; lantern and other lecture appliances, etc.

The physical laboratory is equipped with a good collection of the usual apparatus for laboratory work and lecture-room illustration, to which will be continually added pieces purchased or made in the college shop.

In electricity and magnetism, the equipment includes instruments of high precision, and of the latest forms, for the measurement of current electro-motive force and resistance, as well as others of less accuracy for elementary work.

For more strictly electrical engineering work, the department has the five-hundred-light alternator used in lighting the college buildings, a direct-current "exciter" dynamo, all the apparatus of a complete fifty-five-light Edison isolated electric lighting plant, a Sorley storage battery of twenty-six cells, arc and incandescent lamps, and standard forms of voltmeter, ammeter, and transformer.

The zoölogical laboratory is well supplied with aquaria, microscopes, dissecting tools, charts, reference books, collections, etc.

The botanical laboratory is supplied with a good herbarium, microscopes, and the other necessary appliances.

The surveying instruments are sufficient in number and of the most approved pattern.

MUSEUM.

The museum had for a nucleus the collections made during the state geological survey. To this additions have been made from various sources. Many specimens are being collected to illustrate zoölogy—especially entomology. It occupies a large, well-lighted room in the main building.

LIBRARY.

The library of the college consists of about five thousand bound volumes, besides pamphlets. A considerable part of these are new and expensive books, making good working libraries for the different departments of instruction, including economic science and English and American literature.

Students also have the free use of the Durham public library of about five thousand well-selected volumes.

The college supports a reading-room, which is well supplied with the leading American and foreign periodicals.

THOMPSON HOUSE.

The late Benjamin Thompson's village residence has been fitted and furnished by the college for a dormitory and home for women students. Thompson House will accommodate twenty students, and is in charge of a matron.

FARM.

The farm contains more than three hundred acres of valuable land. It has been provided partly from the funds given by Hon. John Conant, and partly from the Benjamin Thompson estate.

It is used for the purpose of an experiment station, for which it is considered by leading agriculturists to be especially fitted.

A model barn has been erected, at an expense of about ten thousand dollars.

SITUATION AND RAILROAD CONNECTIONS.

Durham is situated on the western division of the Boston & Maine Railroad, sixty-two miles from Boston, and about midway between Rockingham Junction and the city of Dover, being five miles from the latter place.

PECUNIARY AID AND EXPENSES.

Tuition is $60 per year, although numerous scholarships give free tuition to many New Hampshire students.

CONANT SCHOLARSHIPS.

There are thirty Conant scholarships, each paying $40 and tuition, $60,—total $100. These are to be assigned under the following conditions:

1. They are to be given to young men taking an agricultural course.

2. Each town in Cheshire county is entitled to one scholarship, and Jaffrey is entitled to two.

3. Scholarships not taken by students from Cheshire county, and those in excess of the number of towns, are to be assigned to agricultural students at the discretion of the Faculty.

SENATORIAL SCHOLARSHIPS.

There are twenty-four senatorial scholarships,—one for each senatorial district. Each scholarship is to pay tuition, $60. Senatorial scholarships not filled can be assigned to students from other localities at the discretion of the Faculty; they are open to students in all courses.

Early application should be made for these scholarships. They will be reserved for those respective towns and districts until August 1 of each year, after which they may be otherwise assigned for the year.

These scholarships are given for the purpose of aiding deserving students, and will be withdrawn from those who use tobacco or intoxicating liquors, or show themselves not deserving. Janitorships, work on the farm, etc., also furnish assistance to a considerable extent.

VALENTINE SMITH SCHOLARSHIPS.

Through the generosity of Mr. Hamilton Smith of Durham, the sum of $10,000 has been given to the college to establish the Valentine Smith scholarships.

"The income thus accruing to the college shall be given to the graduate of an approved high school or academy who shall, upon examination, be judged to have the most thorough preparation for admission to the college, provided,

"That this income shall be paid to the student to whom it is awarded, in eight semi-annual payments, at the time appointed for the payment of term bills, and,

"That if the student receiving this scholarship shall at any time prove unworthy, in the judgment of the faculty, by reason of defective scholarship or character, he shall forfeit his claim to the student most deserving; and,

"That if the student receiving this scholarship shall cease to be a member of the college, the income from this fund, for the unexpired term, shall be awarded to the student most deserving, in character and scholarship."

These scholarships, yielding $500 each, will be available to those applying for examination, June, 1898, and to one student in each succeeding class.

Expenses may be estimated as follows:

Tuition	Free	$60.00
Text-books	$10.00	20.00
*Fees	15.00	15.00
Room rent, including fuel	18.00 to	40.00
Board, $3 to $3.50 per week, for 35 weeks .	105.00 to	122.50
Total	$148.00	$257.50

Room rent is estimated on the supposition that two students occupy the same room or suite of rooms.

Rooms may be obtained either furnished or unfurnished. Most of the rooms are in suites, and are in buildings provided with heating apparatus and bath rooms.

The college has no rooms for students, except those for women, in the Thompson House. See page 63.

In Q. T. V. Hall the expense of the best suites, with heating, is $70 per year.

In DeMeritt Hall the expense of board, room rent, in best suites, heating, furniture, and care of rooms is $4.50 per week, for each student.

For further information, address President Charles S. Murkland, or Prof. C. M. Weed, Secretary of the Faculty.

* Including all charges commonly considered for extras, except those for breakage and damage to college property.

AGRICULTURAL EXPERIMENT STATION.

This department of the college is provided for by the national government, at an annual expense of fifteen thousand dollars.

The act of congress provides,—

"That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping, as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective states and territories."

NESMITH HALL.

Nesmith Hall, a brick building two stories in height, is used for the work of the Agricultural Experiment Station. It contains offices and working rooms, a reference library, a chemical laboratory, a bacteriological and microscopical laboratory, and an agricultural museum.

BOARD OF CONTROL.

HON. FRANK JONES, *President* . . .	Portsmouth.
HON. GEORGE A. WASON	New Boston.
CHARLES W. STONE, A. M., *Secretary* .	East Andover.
HON. JOHN G. TALLANT . . .	Pembroke.
PRES. CHAS. S. MURKLAND, *ex officio* .	Durham.

STATION COUNCIL.

CHARLES S. MURKLAND, A. M., PH. D., *President and Acting Director.*
FRED W. MORSE, B. S., *Chemist and Vice-Director.*
CHARLES H. PETTEE, A. M., C. E., *Meteorologist.*
HERBERT H. LAMSON, M. D., *Bacteriologist.*
CLARENCE M. WEED, D. SC., *Entomologist.*
FRANK WILLIAM RANE, B. AG., M. S., *Agriculturist and Horticulturist.*

CHARLES D. HOWARD, B. S., *Assistant Chemist.*
CLEMENT S. MORRIS, *Clerk.*
WILLIAM F. FISKE, *Assistant Entomologist.*
ELWIN H. FORRISTALL, B. S., *Farm Superintendent.*
CHARLES W. VICKERY, B. S., *Assistant in Chemistry.*

PRIZE RECORD FOR 1897.

SMYTH PRIZES.

Given by Hon. Frederick Smyth, of Manchester, N. H.

Essay Writing.

1st. Elwin H. Forristall.
2d. Herbert F. Moore.

Speaking:

1st. John W. Fullerton.
2d. Mabel E. Bunker.
3d. Bernice E. Caverno.

Reading:

1st. Harrison E. Clement.
2d. Blanche M. Foye.

BAILEY PRIZE.

Given by Dr. C. H. Bailey, of Gardner, Mass., and E. A. Bailey, B. S., of Keene.

Ellery D. Jenkins.

ERSKINE MASON MEMORIAL PRIZE.

Elwin H. Forristall.

SENIOR STANDING HIGHEST IN THE MILITARY DEPARTMENT.

Leslie David Hayes.

WINNER OF INDIVIDUAL PRIZE DRILL.

Harold Morrison Runlett.

ENTRANCE EXAMINATION PAPERS.*

I. ARITHMETIC.

1. Reduce $\frac{12012}{103740}$ to its lowest terms.

2. Divide $\frac{3}{2}$ of $\frac{5}{6}$ by $\frac{\frac{5}{3}}{\frac{4}{6}}$ and subtract the quotient from $\frac{2\frac{1}{2}}{4-\frac{2}{3}}$.

3. Upon what unit is the whole metric system based? How was that unit obtained? What is a gram?

4. What is the weight in grams of one cubic decimeter of pure water under standard conditions?

5. How many hectares in a rectangular piece of land 500 meters long and 25 meters wide?

6. The population of a certain city is 100,000. It has gained 20,000; what has been the gain per cent?

7. Extract the square root of $\frac{6\frac{1}{4}}{2\frac{1}{4}}$ to five decimal places.

8. If 4 men build 19 rods of wall in $2\frac{1}{2}$ days, in how many days will 7 men build 20 rods?

9. A, B, and C formed a partnership and cleared $20,000. A put in $8,000 for 4 months, and then added $2,000 for 6 months; B put in $16,000 for 3 months, and then withdrawing half his capital, continued the remainder for 5 months longer; C put in $13,500 for 7 months. How divide the profits?

10. Find the simple, the annual, and the compound interest on $1,000 for 2 years, 5 months, and 7 days, at 6 per cent.

II. ALGEBRA.

1. Define algebra, formula, radical, term, and factor, and give the signification of fractional and negative exponents.

2. From $3ax^2-(4a-2x)(x+2x)+a[y-(a+2y)]$ subtract $5a(x-y)+3a^2-2x^2(a+1)$.

* Given as specimens of average papers.

3. Multiply $a^2x^{-\frac{1}{3}}-3x$ by $b+2x^{-2}$.

4. Divide $4a^2y^3x^{\frac{2}{3}}$ by $-2a^3b^2yx^2$ and extract the cube root of the quotient.

5. $\frac{3a}{x}+\frac{2}{6y}=5.$ $\frac{4a}{x}-\frac{1}{6y}=2.$ Solve for x and y.

6. Obtain prime factors of a^3-x^3, a^3+x^3, and a^4-x^4.

7. Multiply $\sqrt{-x}$, $-\sqrt{-y}$, $-\sqrt{y}$ and $\sqrt{y}$.

8. $\frac{1}{a+\sqrt{a^2-x^2}}-\frac{1}{a-\sqrt{a^2-x^2}}=\frac{a}{x^2}.$ Solve for x.

9. Reduce $\frac{\sqrt{2}+\sqrt[3]{3}}{\sqrt{2}-\sqrt[3]{3}}$ to a fraction with a rational denominator.

10. $4ay^2-3by=c$. Solve for y.

III. PLANE GEOMETRY.

1. Define geometry, proposition, theorem, problem, axiom, postulate, corollary, scholium, right angle, perpendicular, parallel, magnitude, and form.

2. Define trapezoid, rhombus, regular polygon, apothem, sector of a circle, and segment of a circle. Name and explain the different kinds of triangles.

3. Give expressions for the circumference and area of a circle. State the relations existing between similar areas.

4. Demonstrate that if a perpendicular be erected at the middle of a line, any point in that perpendicular is equally distant from the extremities of the line; also that any point without is nearer the extremity on its own side of the perpendicular.

5. Demonstrate that if two lines are cut by a third, making the sum of the interior triangles on the same side of the secant line equal to two right angles, the two lines are parallel.

6. Demonstrate that in the same or equal circles two incommensurable arcs are to each other as the angles which they subtend at the center.

7. Demonstrate that the opposite sides of a parallelogram are equal.

8. Demonstrate that triangles mutually equiangular are similar.

9. Construct a fourth proportional to three lines.

IV. PHYSICS.

1. Define motion, velocity, acceleration, mass, force, energy, work, heat, temperature, a ray of light, a mirror, a lens, magnetic substances, a conductor.

2. There are two equal forces of 10 units each acting upon the same body, and their lines of action are at right angles to each other. Find the resultant of the two forces.

3. A lever 10 feet long is supported on a fulcrum 4 feet from one end. At the shorter end is placed a weight of 150 pounds. What weight placed 1 foot from the other end of the lever will keep it horizontal?

4. Name and illustrate some of the effects of heat. What is the object of the thermometer? At what temperature Fahrenheit does water freeze? boil?

5. A beam of light strikes a pane of glass at an angle of 45 degrees. What angle will it make with the pane on passing into the air again? Give the reasons for the answer.

6. Explain what is meant by an echo.

7. Name some of the applications of electricity.

V. BOTANY.

1. Define germination, cotyledon, plumule, caulicle.

2. What is the purpose of the root? Name the different kinds of roots.

3. What is the purpose of the stem? Define rhizome, tuber, bulb.

4. What is an annual plant, a biennial, a perennial, an herb, a shrub, a tree?

5. Name the parts of a leaf. Name six different forms of leaf.

6. What is a compound leaf? Define stipule, bract, involucre.

7. Define raceme, head, spike, umbel, panicle, cyme.

8. Define calyx, sepal, petal, corolla, perianth, pollen, ovule.

9. What are the different parts of a stamen, of a pistil? What is a perfect flower, a complete flower? Define monecious, diecious.

10. What is a fruit, a multiple fruit, stone fruit, pod, capsule, follicle?

VI. PHYSICAL GEOGRAPHY.

1. Name the principal mountain chains of North America and South America. Give the situation of each.

2. Classify volcanoes. Locate and give an account of some of the principal ones.

3. Describe the Arctic current; the Japan current; and the equatorial currents of the Atlantic and the Pacific.

4. What are isothermal lines? If the earth were divided by isothermal lines into six zones, what would be included in each zone?

5. Draw a map of the United States and place upon it the isothermal lines which would pass through Central New Hampshire.

6. Give a comprehensive account of the St. Lawrence basin.

VII. HISTORY OF THE UNITED STATES.

1. Give a brief acount of the Spanish exploration of North America.

2. What nations held territory in North America during the seventeenth century? What did each nation hold?

3. Give an account of King Philip's War.

4. Give an outline of the French and Indian War.

5. Give a brief but comprehensive account of the Siege of Yorktown (1781).

6. Give a brief account of the adoption of the Constitution.

7. Give the causes and results of the Mexican War.

8. Give a brief account of each acquisition of United States territory.

9. Give an account of the principal military operations during the year 1864.

10. Explain the Emancipation Proclamation and the Alabama claims.

VIII. GRECIAN HISTORY.

1. Give an account of the war between Sybaris and Croton.

2. Describe the different orders of Grecian architecture and explain the technical terms.

3. Compare the laws of Lycurgus with those of Solon.

4. Give an account of the siege of Plataea.

5. Give an acount of the life and teachings of Socrates.

6. Give a description of the Parthenon.

7. Give some account of the Stoics and the Epicureans.

8. With fifty words for each, give an account of Croesus and Histiaeus.

9. Locate and, with a sentence for each, describe the following: Corcyra, Olympia, Egina, Delphi, Thebes.

10. Draw a map showing the location of the places mentioned in the above questions.

IX. ROMAN HISTORY.

1. Give an account of the classes of people found in Rome.

2. Give the history of the Laws of the Twelve Tables.

3. Give the history of the war with Pyrrhus.

4. Give an outline of the conquest of Gaul.

5. Give an account of the expedition of Crassus against the Parthians.

6-8. Give an account of each of the following, using about fifty words in each case: Sulla, Mark Antony, Caligula, Cicero, Vespasian, Titus.

9. Draw a map showing the Roman empire at its greatest extent.

10. Locate and, with a sentence for each, describe the following: Etruria, Numidia, Pannonia, Tarentum, Mauritania, Moesia, Sardinia, Po, Danube, Alps.

X. FRENCH.

1. Give five simple tenses of some regular verb of the first conjugation.

2. Give the principal parts of ten irregular verbs.

3. Give examples of different ways of forming the feminines of adjectives.

4. Count from 1 to 15.

5. The translation of a page of easy French.

XI. ENGLISH.

The composition should be correct in spelling, grammar, and punctuation.

I.

Select any *four* of the following topics and write a short composition on each:

1. The Minister's Black Veil.
2. The arrival of the Puritans at Merry Mount.
3. Mr. Higginbotham's Catastrophe.
4. A Rill from the Town Pump.
5. The White Old Maid.
6. Endicott and the Red Cross.
7. The Beginning of the Plague in London.
8. The Story of the Piper.
9. Defoe's Account of the Shutting up of Houses.
10. The Burial of those who died of the Plague.
11. My Opinion of the State of London during the Plague.
12. The Adventures of the Old Soldier, the Lame Sailor, and the Joiner.

II.

Omit *one.*

1. Give an account of Samuel Johnson's life until he left Oxford.

2. What were the relations between Johnson and Boswell? What is Macaulay's estimate of the latter?

3. What, according to Macaulay, were, in general, the circumstances of English men of letters at the time of Johnson's first arrival in London?

4. State the circumstances under which Johnson's edition of Shakespeare's plays was produced. What is Macaulay's opinion of the work?

5. What do you think of Johnson as a man?

ALGEBRA FOR PREPARATORY YEAR.

1. Define algebra, coëfficient, formula, term, factor, exponent, and root.

2. From $4ay-(3a+2ay)+(a-y)(a+y)$ take $2y^2-4a+7ay$.

3. Obtain prime factors of a^3-x^3 ; a^3+x^3 ; a^4-x^4.

4. Simplify $\dfrac{x-a}{x-\dfrac{(x-b)(x-c)}{x+a}}$

5. $\dfrac{6x+13}{15}-\dfrac{3x+5}{5x-25}=\dfrac{2x}{5}$. Solve for x.

6. Two bicyclists started at the same time from New York and Boston, a distance of 200 miles, traveling one at $9\frac{1}{2}$ miles an hour, the other at $9\frac{1}{4}$ miles an hour. In how many hours after starting did they meet, and how far from Boston?

7. $ax+by=c$; $px+qy=r$. Solve for x and y.

8. Extract square root of $4x^4+9-30x-20x^3+37x^2$.

9. Cube $a+2b-3c$. Square $x-2y^2+ax$.

ENGLISH FOR PREPARATORY YEAR.

Use great care. Divide into paragraphs. Marked inaccuracy in spelling, grammar, or composition will be considered as a failure.

1. Write a simple sentence containing eight or more words, and tell what part of speech each word is.

2. Write a complex sentence and a compound sentence. Explain the difference between them.

3. Give the third person singular of the verb "lead" in all the moods and tenses, in both the active and the passive voice.

4-6. Write fifty words upon each of the following:

(1) Changes made by the railroads of New England.
(2) Indian wars of New England.
(3) The New England town-meeting.

7. Correct the errors in the following sentences:

(1) The boy stood on the burning deck,
Whence all but he had fled.
(2) I am going and see him this afternoon.
(3) He hadn't seen what he had ought to do.
(4) Get up on to the platform.
(5) Try and read as many a good book as you can.
(6) I guess he will resign, for he told he was going to.

8. What is the proper difference (if any) in meaning between the two following?

I would do it if I could. I should do it if I could.

9. Which is the right expression?

He felt badly at his loss, or, He felt bad at his loss. If you substitute "discouraged" for "badly" or "bad," in the above, what part of speech will it be?

CATALOGUE OF GRADUATES.

BACHELORS OF SCIENCE.

NOTE.—The arrangment is; (*a*) Name in full. (*b*) Later degrees taken. (*c*) Residence at time of entering college. (*d*) Occupation, etc. (*e*) Present residence. *Dead.

1871.

William Preston Ballard, Concord. Farmer. *Concord.*
Lewis Perkins, Hampton. Railroad Contractor. *North Adams, Mass.*
Charles Henry Sanders, Penacook. Merchant. *Penacook.*
3—

1872.

Edwin Bartlett, Bath.
Frank Alexander White, Bow. Farmer and surveyor. *Bow. P. O. Box 431, Concord, N. H.*
2—

1873.

Frederick Erasmus Eldredge, Kensington.
James Fred Smith, A. M. (Dartmouth, 1885), Principal Iowa College Academy. *Grinnell, Iowa.*
Charles Henry Tucker, Plaistow. Woodworker. *24 Highland Street, Amesbury, Mass.*
3—

1874.

Millard Fillmore Hardy, Nelson. Graduated Theo. Inst., Ct., 1878. Clergyman. *Townshend, Vt.*
*Henry Abbott Sawyer, North Weare. Business.
2—*1

1875.

Walton Herman Aldrich, M. D. (Univ. N. Y. City, 1880), Troy. Physician. *Marlborough.*
Frank Pierce Curtis, Stoddard. Manager of Store. *Greenfield, Mass.*

Frank Veranus Emerson, Lebanon. Manager Emerson Edge Tool Co. *East Lebanon.*

Charles Webster Hardy, M. D. (Mo. Med. Coll., 1881), Marlborough. Physician. *Waterville, Kan.*

Harvey Jewell, Winchester. Butler & Jewell, Nurserymen and Fruit Growers. *Cromwell, Ct.*

*Charles Ormille Leavitt, Lebanon.

*John Loney McGregor, D. D. S. (Phila. Dental Coll., 1877), M. D. (Dartmouth, 1883), Whitefield. Physician.

Eliel Peck, Lebanon. Merchant. *Kimball, Minn.*

Ira William Ramsey, Walpole. Farmer. *Walpole.*

Orlando Leslie Seward, Keene. Architect. *Keene.*

Emery Mason Willard, Harrisville. Druggist, with G. S. Cheney & Co., 15 Union St., Boston, Mass.
109 Hewlett St., Roslindale, Mass.

11—*2

1876.

Herbert Cyril Aldrich, Troy. Insurance and Real Estate. *Keene.*

Edmund Lawson Brigham, Jaffrey. Mechanic. *Clinton, Mass.*

Joseph Warren Butterfield, Westmoreland. Farmer. *North Montpelier, Vt.*

Arthur Frank Chamberlain, Westmoreland. General Salesman for Michigan. Edson, Keith & Co., Chicago.
6542 Kimback Ave., Chicago, Ill.

Anson Ballard Cross, Holyoke, Mass. Railroad Contractor, with Vandegrith & Jacobs, Philadelphia. *Wilmington, Vt.*

Warren Webster Kimball, Troy. E. P. Kimball & Son, General Store. *Troy.*

Daniel Deeth Parker, Fitzwilliam. Manufacturer. *Gardner, Mass.*

7—

1877.

Rollin Kirk Adair, Indian Territory. Farmer. *Locust Grove, Cherokee Nation, Indian Ter.*

*Homer Brooks, M. D. (N. Y. Hom. Med. Coll., 1881), Franconia.

John Washington Carson, Mont Vernon. Farmer. *Francestown.*

*Charles Otto Chubert, Troy.

*Charles Albert Edwards, LL. B. (State Univ., Iowa, 1880), Keene. Lawyer.

William Francis Flint, Richmond. Surveyor, Fruit Grower, and Forestry Expert. *Winchester.*

Clinton Camillus Hall, Westmoreland. Farmer. *East Westmoreland.*

John Goodrich Henry, M. D. (Dartmouth, 1880), Chesterfield. Physician. *Winchendon, Mass.*

Charles Pitkin Hollister, North Montpelier, Vt. Farmer. *North Montpelier, Vt.*

George Mirick Holman, M. D., Fitchburg, Mass. Chemist. *Fitchburg, Mass.*

Charles Appleton Hubbard, Troy. Comptroller of the Oregon Short Line Railroad Company, Boston. *Newton Center, Mass.*

Charles Augustus Wheeler, East Calais, Vt. Farmer and Bee Keeper. *Bracken, Corral Co., Texas.*

Everard Whittimore, Fitzwilliam. Agent, New York Life Insurance Co. *Hudson, Mass.*

13—*3

1878.

Ezra Eastman Adams, Manchester.

*Elmer Kilburn, Marlow. Civil Engineer.

Charles Edward Record, Fitchburg, Mass. Contractor and Builder. *Leominster, Mass.*

3—*1

1879.

Charles Hardy Bailey, M. D. (Dartmouth, 1881). Physician. *39 East Broadway, South Gardner, Mass.*

Richard Clinton Chapin, Chicopee, Mass. Agent for Nonotuck Paper Company. *Holyoke, Mass.*

Lucius M. Cragin, Lempster. Farmer and Surveyor. *Springfield, Vt.*

*Nathaniel Cutter Holmes, Jaffrey. Lawyer.

Fred Charles Parker, Lempster. Merchant. *Acworth.*

George Henry Wilkins, M. D. (N. Y. Hom. Med. Coll., 1883), Amherst. Physician. *Palmer, Mass.*

6—*1

1880.

Charles Harvey Hood, Derry. Milk Contractor. H. P. Hood & Sons, Boston, Mass. *20 Highland Ave., Somerville, Mass.*

1—

1881.

Edwin Thomas Aldrich, Troy. With G. H. Aldrich & Son, General Insurance Agents. *Keene.*

Henry Lyman Barnard, Troy. Clerk. *Troy.*

*George Jordan Boardman, Lawrence, Mass.

Edwin Franklin Bristol, Harwinton, Conn. Farmer and Mill Owner. *Ascutneyville, Vt.*

Artemas Terald Burleigh, Farmer. *Franklin.*
Frank Dana Ely, Cavendish, Vt. Business. *Cavendish, Vt.*
Sanford Eugene Emery, LL. B. (Albany Law School, 1886), Proctorsville, Vt. Lawyer. Postmaster. *Proctorsville, Vt.*
Charles Herbert Hazen, Hartford, Vt. Farmer. *Bethlehem.*
Frank Marston, Hartford, Vt. Merchant. *Olcott, Vt.*
William Augustus Megrath, M. D. (Dartmouth, 1885), Cavendish, Vt. Physician. *Loudon.*
Fred Townsend Stanton, Strafford. Farmer. *Strafford Corner.*
Victor Hugo Stickney, M. D. (Dartmouth, 1883), Tyson, Vt. Physician. President Electric Power & Coal Co. Vice-president First National Bank. *Dickenson, N. Dak.*
Samuel Austin Wallace, Ph. G. (Boston School of Pharmacy, 1886), West Hartford, Vt. Druggist. *Crookston, Minn.*
George Herbert Whitcher, Strafford. Professor of Agriculture and Director of Experiment Station (1887-'94). General Agent Bowker Fertilizer Co., Boston. *Durham.*

14—*1

1882.

Harvey Lincoln Boutwell, LL. B. (Boston Univ., 1886), Hopkinton. Lawyer, 209 Washington St., Boston. *37 Peirce St., Malden, Mass.*
Dana Justin Bugbee, North Pomfret, Vt. Agent for Publishers. *North Pomfret, Vt.*
Robert Fletcher Burleigh, M. D., (Dartmouth, 1887), Franklin. Physician. *Rochester.*
La Forrest John Carpenter, Surry. *Cliff St., Malden, Mass.*
Edwin Preston Dewey, Hanover. Civil Engineer. *Pasadena, Cal.*
George Andrew Loveland, LL. B. (Univ. of N. Y., 1886), Norwich, Vt. Observer and Section Director, U. S. Weather Bureau. *Lincoln, Neb.*
John Wright Mason, Hanover.
Harlan Addison Nichols, Derry. County Physician. *Fort Stockton, Texas.*
Frank Elmer Thompson, Stark. Vice-president and Treasurer, Blackwater Lumber Co. *Davis, W. Va.*

9—

1883.

Elmore Ferdinand Arnold, M. D. (Univ. City of N. Y., 1885), Londonderry, Vt. Physician. *New York, N. Y.*
Frank Landor Bigelow, Proctorsville, Vt. Instructor in Mathematics and Sciences, Goddard Seminary, Barre, Vt., 1883-'86. Business. *Rutland, Vt.*

Frederick Stocks Birtwhistle, Troy. Electrical Engineer, Foreign Dept., General Electric Co., 44 Broad St., New York. *Troy.*

Noice D Bristol, Hawinton, Conn. Scenic Photographer. *176 Euclid Avenue, Cleveland, O.*

Fred Plummer Comings, Lee. Trustee 1891—. Principal High School, South Yarmouth, Mass. *Lee.*

Frank Harry Follansbee, Canaan. Railway Mail Clerk. *Enfield.*

Adams Clark French, Franklin Falls.

James Edgar Gay, Tunbridge, Vt. Partner, Gay Brothers, Cavendish Woolen Mills. *Cavendish, Vt.*

Elmer Daniel Kelley, Franklin Falls. Farmer and Market Gardener. *Franklin Falls.*

Alvah Benjamin Morgan, Canaan.

William Lincoln Whittier, Deerfield. Farmer and Manufacturer of Lumber. *Deerfield Center.*

Charles Minot Woodward, Hanover. Instructor in Agriculture, 1883-'84. Teacher of Science, High School. *Corsicana, Tex.*

12—

1884.

*Ernest Smith Cummings, Lee. U. S. Signal Service.

Fred Carlos Davis, South Reading, Vt. Lawyer. Clerk and attorney, Springfield Electric Railway Co. *Springfield, Vt.*

Sylvester Miller Foster, Riverhead, N. Y. With N. W. Foster & Son, General Insurance Agents. Secretary, Suffolk County Agricultural Society. Secretary and Treasurer, Riverhead Coal Co. *Riverhead, N. Y.*

Herbert Harvey Kimball, Hopkinton. Clerk, U. S. Weather Bureau. *Washington, D. C.*

Moses Bisbee Mann, Benton. Custom House Official. *74 Upham St., Malden, Mass.*

George Milton Moore, Plymouth, Vt. Insurance Agent. *Ludlow, Vt.*

Ziba Amherst Norris, Lyme. Norris Bros., Groceries and Provisions, 1673-79 Washington St., Boston. *1677 Washington St., Boston, Mass.*

Edwin Chapin Thompson, Lee. Observer in charge U. S. Weather Bureau. *Sandusky, Ohio.*

8—*1

1885.

George Ellsworth Adams, Weston, Vt. Merchant. *Vernal, Utah.*

Ruel Seabury Alden, Lyme. Superintendent of College Farm, 1895-'97. Farmer. *Concord.*

Walter Eugene Angier, C. E. (Dartmouth, 1887), West Swanzey. Civil Engineer.

Edward Alonzo Bailey, West Swanzey. With George Holbrook & Co. *Keene.*

Phillips Greenleaf Bickford, Lyme.

Andrew Walter Brill, Riverhead, L. I. Seedsman and Florist. *Hampstead, Queens Co., N. Y.*

Paul Cuff Brooks, Boston, Mass.

Frank Jay Emerson, Epping. Clerk, Great Falls House. *Somersworth.*

Allen Hazen, Wilder, Vt. Consulting Engineer. *St. Paul Building, 220 Broadway, N. Y.*

George Mayo Mullens, Londonderry. Farmer. *North Londonderry.*

Albert Henry Wood. Lebanon. Associate Professor of Agriculture, 1890-'94. General Agent, L. B. Darling Fertilizer Co., Pawtucket, R. I. *Durham.*

11—

1886.

Frank Albert Davis, South Lee. Observer, U. S. Weather Bureau. Student, Boston University School of Medicine. *Boston, Mass.*

James Ellsworth Harvey, Surry. Photographer. *Clinton, Mass.*

Belezar Stoianoff Ruevsky, Sistova, Bulgaria. Professor in State Commercial School. *Sistova, Bulgaria.*

Madison Templeton Thurber, M. D. (Dartmouth, 1890), Webster. Physician. *95 Savin Hill Avenue, Dorchester, Mass.*

Edward Hills Wason, New Boston. Lawyer. *Nashua.*

George Pillsbury Wood, Lebanon. Civil Engineer. City of Baltimore Topographical Survey. *922 Equitable Building, Baltimore, Md.*

6—

1887.

William Sprague Currier, Norwich, Vt. In charge U. S. Weather Bureau Office. *Toledo, Ohio.*

Arthur Woodbury Hardy, C. E. (Dartmouth, 1889). Hopkinton. Civil Engineer.

George Albert Sanborn, Rochester. County Agent, California Perfume Co. *Rochester.*

Hiram Newton Savage, White River Junction, Vt. Member, Am. Soc. C. E.; Engineer-in Charge, Sweetwater Dam Irrigation and Domestic Water System; Chief Engineer, San Diego Land and Town Co.; Chief Engineer, National City and Otay Railway Co. *National City, Cal.*

Bion Leland Waldron, Strafford. Weather Bureau. *Louisville, Ky.*

5—

1888.

Melvin Burnside Carr, North Haverhill. With West End Street R. R., General Power Station. *Boston, Mass.*

Herbert Grant Davis, South Lee. Electrical Engineer, General Electric Co. *Lynn, Mass.*

Edwin Chandler Gerrish, Webster. Assistant Paymaster for Proprietors of the Locks and Canals on the Merrimack River. *Lowell, Mass.*

William Nelson Hazen, C. E. (Dartmouth, 1890), Hartford, Vt. Designing Engineer, Berlin Iron Bridge Co. *East Berlin, Conn.*

Edward David O'Gara, Hanover. Farmer. *Hanover.*

George Elmer Porter, M. D. (Dartmouth, 1892), Hartford, Vt. Physician. *Marengo, Wayne Co., N. Y.*

George Jonathan Sargent, Canterbury. Civil Engineer. *39 No. Main St., Concord.*

John Warren Smith, Grafton. Observer U. S. Weather Bureau, *Helena, Montana.*

George Elwin Walker, Littleton. Farmer. *Littleton.*

9—

1889.

Fred Harvey Colby, Hopkinton. Fruit Grower. *Prosser, Wash.*

Linwood Carroll Gillis. Editor and Publisher, "Hanover Gazette"; Proprietor, Dartmouth Press. *Hanover.*

*Louis Jerome Hutchinson. Norwich, Vt. Electrician.

John Lawrence Norris, Lyme. Norris Bros., Groceries and Provisions, 1673-79 Washington St., Boston. *6 Worcester Sq., Boston, Mass.*

Charles Walter Earl Scott, Winchester. *Winchester.*

David Elmer Stone, Hartford, Vt. Carpenter. *Durham.*

Fred Washburne, West Springfield. Foundry Dept., The Sargent Co., New Haven. *96 Chapel St., New Haven, Ct.*

7—*1

1890.

John Young Jewett, C. E. (Dartmouth, 1895), Gilford. Civil Engineer, Dam and Aqueduct Dept., Metropolitan Water Board, Boston. *11 Prescott St., Clinton, Mass.*

Joseph Franklin Preston, Hanover. Clerk. *Boston, Mass.*

Elihu Quimby Sanborn, Webster. Machinist. *Contoocook.*

Clarence Ira Slack, Norwich, Vt. With Vermont Marble Co. *West Rutland, Vt.*

4—

1891.

Ernest Gowell Cole, Hampton. Partner, J. A. Lane & Co., General Store. *Hampton.*

Russell Marden Everett, Chester. Teacher of Mathematics, Broaddus Classical and Scientific Institute. *Clarksburg, W. Va.*

Edward Payson Stone, Canaan Center. Chemist, Magnolia Plantation, Lawrence, La. *Canaan Center.*

3—

1892.

Percey Lovejoy Barker, C. E. (Dartmouth, 1894), Milford. Civil Engineer, Boston & Maine R. R.
16 Bancroft St., Worcester, Mass.

Fred Driggs Fuller, Hanover. Assistant Chemist, New York Agricultural Experiment Station. *Geneva, N. Y.*

Arthur Bennerzett Hough, Lebanon. Farmer. *Lebanon.*

Edward Munroe Stone, C. E. (Dartmouth, 1894), Marlborough. Civil Engineer. With L. W. Burt, C. E.
39 Pearl St, Hartford, Ct.

4—

1893.

Wilton Everett Britton, Keene. Horticulturist, Connecticut Agricultural Experiment Station.
801 Orange St., New Haven, Ct.

Frank John Bryant, Enfield. Teacher. *Lebanon.*

Charles Elbert Hewitt, M. M. E. (Cornell, 1895), Hanover. Member of Firm of Sheehan & Hewitt, Electrical Engineers.
123 Third St., Newburgh, N. Y.

Charles Lincoln Hubbard, M. E. (1895), Fitzwilliam. Mechanical Engineer, with Prof. S. H. Woodbridge, 85 Water St., Boston.
Needham, Mass.

Orrin Moses James, Northwood. Civil Engineer.
Northwood Narrows.

Arthur Whitmore Smith, M. S. (Wesleyan Univ., 1895) Norwich, Vt. Expert Physical Assistant in Nutrition Investigations, in the Office of Experiment Stations, in the U. S. Dept. of Agriculture. *301 College St., Middletown, Conn.*

6—

1894.

Bert Sargent Brown, Hanover. Foreman. *St. Johnsbury, Vt.*

Fred Willis Gunn, Keene. Electrician, Fall Mountain Paper Co.
Bellows Falls, Vt.

Frederick William Howe, Hollis. Assistant in Chemistry.
Institute of Technology, Boston, Mass.

3—

1895.

Frank Stanley Adams, Gilsum. Editor and Proprietor, "Rhode Island Pendulum." *East Greenwich, R. I.*
Frank Clifton Britton, Keene. Post-Graduate Student of Agriculture, Cornell University. *Ithaca, N. Y.*
Henry Elmer Hill, Plainfield, Vt. Farmer. *Plainfield, Vt.*
Charles Arthur Trow, Mt. Vernon.

4—

1896.

Lewis Harris Kittredge, Keene. With New York Belting and Packing Co. *Passaic, N. J.*

1—

1897.

Harlan Winifred Barney, Grafton. Farmer. *Grafton.*
Carrie Augusta Bartlett, Lee. Art Student. *Boston, Mass.*
Mary Blaisdell Bartlett, Epping. Teacher. *Epping.*
Walter French Buck, Manchester. Instructor in Business College. *Salem, Mass.*
Arthur Willard Colburn, Dracut, Mass. Farmer. *Dracut, Mass.*
Carrie Lydia Comings, Durham. Teacher. *Durham.*
Mary Elizabeth Comings, Durham. Teacher. *Durham.*
Irving Lyford Dennett. Machinist. *Manchester.*
Elwin Henry Forristall, Columbia. Superintendent of College Farm. *Durham.*
Leslie David Hayes, Durham. Graduate Student. *Durham.*
John Norton Hunt, Peterborough. Machinist. *Marlboro, Mass.*
Ellery Dunbar Jenkins, Lee. Chemist of Lowell Fertilizer Co. *Lowell, Mass.*
Woodruff Mason, Stamford, Ct. Medical Student, Columbia University. *New York, N. Y.*
Roscoe Hart Shaw, Milton. Student of Chemistry. *Zurich, Switzerland.*
Charles William Vickery, Dover. Assistant in Chemistry, Experiment Station. *Durham.*
Delbert Amos Wheeler, South Ashburnham, Mass. *Littleton Common, Mass.*
Everett Sidney Whittemore, Colebrook. Business. *Clinton, Mass.*

17—

TWO YEARS' COURSE IN AGRICULTURE.

1897.

Lyman Charles Stratton, Hollis. Farmer. *Hollis.*

SUMMARY.

Graduates, Bachelors of Science, 1871-'97 inclusive	174
Graduate, Two Years' Course	1
Agriculturists	32
Business pursuits	44
Chemists	8
Clergyman	1
Civil, Mechanical, and Electrical Engineers	15
Editors	2
Lawyers	4
Manufacturers and Mechanics	11
Physicians	13
Post-Graduate Students	5
Teachers	9
Unclassified	3
Unknown	12
Weather Bureau	7
Twice Classified	2
Dead	11

CALENDAR

1897

JULY.

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1898

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THE
JOHN CRERAR
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COLLEGE CALENDAR.

1897.

September	9.	First term of fifteen weeks began—Thursday morning.
December	22.	First term ends—Wednesday night.

Winter Vacation of Three Weeks.

1898.

January	13.	Second term of ten weeks begins—Thursday morning.
March	23.	Second term ends—Wednesday night.

Spring Vacation of One Week.

March	31.	Third term of ten weeks begins—Thursday morning.
June	6–7.	Examinations for admission—beginning Monday at 2.30 p. m.
June	7.	Annual examinations close—Tuesday noon.
June	7.	Smyth Prize Reading and Speaking—Tuesday evening.
June	8.	Commencement—Wednesday.

Summer Vacation of Thirteen Weeks.

September	6–7.	Examinations for admission—beginning Tuesday at 2.30 p. m.
September	8.	First term of fifteen weeks begins—Thursday morning.
December	21.	First term ends—Wednesday night.

Winter Vacation of Three Weeks.

1899.

January	12.	Second term of ten weeks begins—Thursday morning.
March	22.	Second term ends—Wednesday night.

UNIVERSITY OF ILLINOIS-URBANA
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